

HEART DISEASE
IN
CHILDHOOD AND YOUTH.



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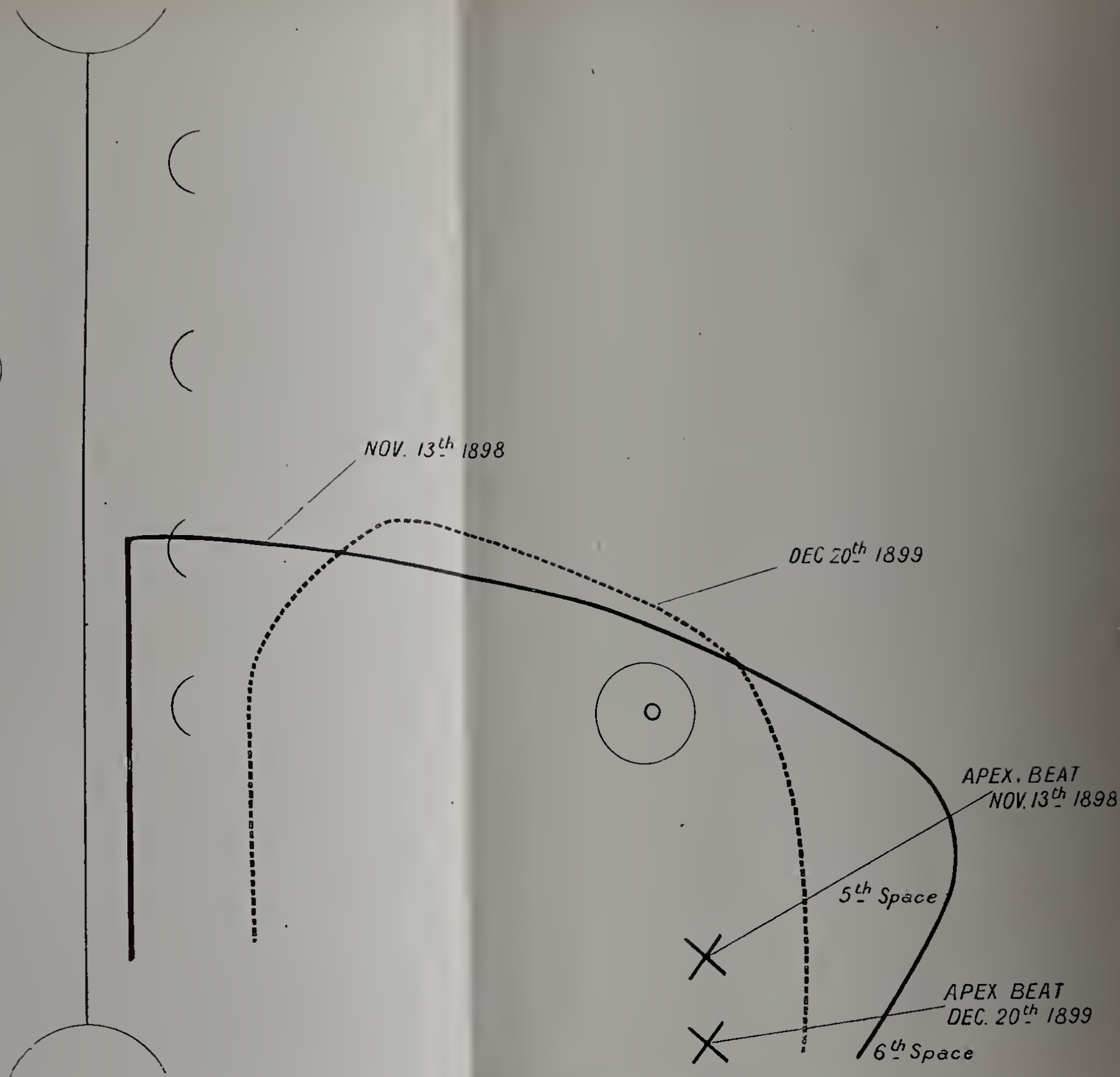
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In the above diagram it will be noticed that as the patient improved there was recession of the left cardiac margin, and a lowering of the apex-beat: changes indicating a reduction of the dilatation and an increase of the hypertrophy of the left ventricle as the patient's condition improved. The right side of the heart similarly improved.

SCHOOL OF MEDICINE
1891

HEART DISEASE IN CHILDHOOD AND YOUTH.

WITH TWO APPENDICES.

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SECOND EDITION.



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PREFACE TO FIRST EDITION.

THE following pages are written with the object of presenting to the reader a brief outline of the more usual varieties of heart disease as they occur in young persons. Acute cardiac affections, which are for the most part complications of a general febrile state, such as rheumatic fever, do not fall within the scope of this work, and are only incidentally touched upon.

Attention is directed to the hygienic management of young heart patients, and questions as to education, sports, etc., in such cases are discussed. Finally, a number of illustrative cases are quoted, followed in each instance by remarks indicating the salient points in diagnosis, prognosis, and treatment. In this latter part an attempt is made to bring actual cases before the mental vision of the reader in their clinical and practical bearings.

I have to thank Dr. E. Claude Taylor for his kindness in going over the MSS. and proofs.

CHAS. W. CHAPMAN.

21, WEYMOUTH STREET, W.;

February 1st, 1900.



PREFACE TO SECOND EDITION.



SOME of my medical friends have suggested that the two papers "Rest in the Treatment of Heart Disease" and "The Judicious Use of Tonics," which have appeared in the 'Clinical Journal' during the current year, should appear in the form of appendices in the present edition. I have, therefore, included them.

CHAS. W. CHAPMAN.

21, WEYMOUTH STREET, W.;

October, 1903.

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INTRODUCTION.

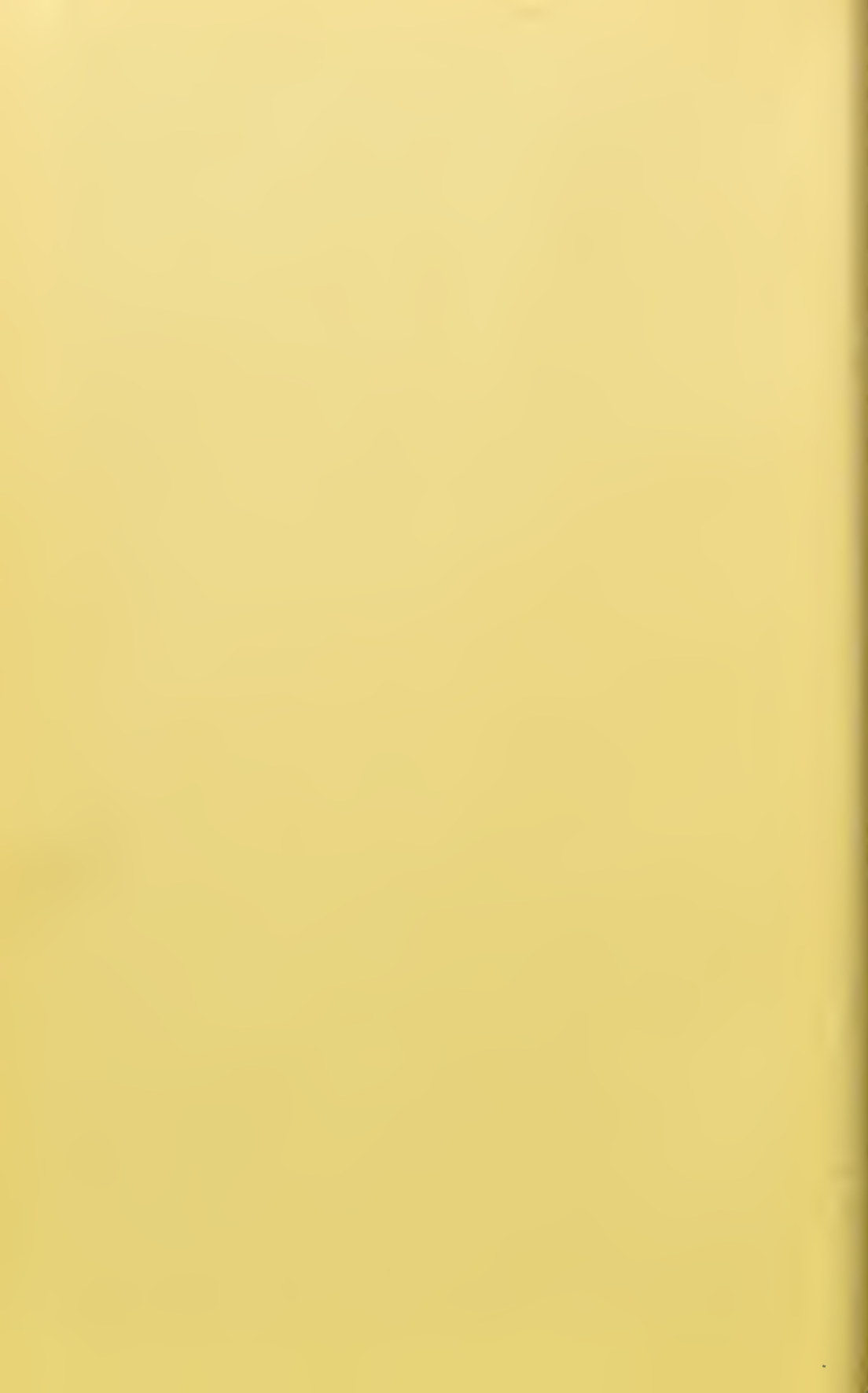
My friend Dr. Chapman, who is also an old pupil of mine, has for many years been much interested in the cardiac diseases of children. By carefully watching such cases, not only in regard to their medical treatment, but also as to the mode of life and education of the patients, he has arrived at some more definite and favourable conclusions than have generally been suspected.

It is impossible to give in a text-book all the details connected with the close attention and treatment which such cases require, and therefore the author has done well to select some marked examples of these affections, describing fully the symptoms and treatment which have been found most serviceable, in order to illustrate what may be accomplished in a class of diseases usually called incurable.

I consider Dr. Chapman has written a little book of great interest and value.

SAMUEL WILKS.

January 25th, 1900.



HEART DISEASE IN CHILD- HOOD AND YOUTH.

PART I.

CAUSES, HYGIENIC MANAGEMENT, AND TREATMENT.

HEART diseases in children did not always claim the amount of attention which they do at the present time. Dr. Henoch, in the opening chapter on 'Diseases of the Circulatory Organs,' says "Pathological changes in the heart are not much rarer in children than in adults. The age causes neither anatomical nor clinical differences of any essential importance." On the other hand, in Dr. Tanner's work, the author remarks:—"It may further be stated that, admitting the comparative rarity of heart disease in childhood, we must, nevertheless, allow that it is far more common than was formerly supposed, and may, perhaps, be still more so if carefully sought for." To the late Dr. Sturges we owe much of our knowledge of the special characteristics of cardiac disease in children, the Lumleian Lectures of 1894 being amongst the most valuable contributions on the subject. A little thought will show that heart

disease must necessarily in some respects affect children differently from adults, and further consideration will point out where the variation exists. In childhood and youth we have growth and great activity of the organs of nutrition, in later life degenerative changes have to be considered; again, in the former, questions of education and games are pressing, while in the latter domestic and business responsibilities are elements in the case that must have their due weight in prognosis and treatment. Dr. Sturges, in the lectures already referred to, shows that the incidence of rheumatism varies even in children at different periods. He gives an analysis of 100 cases where post-mortem examinations had been made, the proportion of rheumatic and non-rheumatic being—

Rheumatic—boys, 22 ; girls, 32	...	54
Non-rheumatic—boys, 22 ; girls, 24	...	46

Ages of the rheumatics :

Between two and four years	...	...	2
Between four and six years	...	...	4
At six years old...	...	...	6
Between six and twelve years	...	...	42

In children arthritic symptoms do not so generally occur concurrently with the cardiac. In a first attack of rheumatic fever there may be no morbid cardiac sounds until late in the illness, or, indeed, until after apparent recovery. Later on the patient may become breathless after some extra exertion, when, for the first time, a valvular

lesion is discovered. Cases illustrating this are given.

Causes of Heart Disease in Children.—

These are rheumatism, chorea, nephritis (generally from scarlet fever), dilatation from mural degeneration or weakening during acute fevers, and congenital disease, due either to intra-uterine endocarditis or imperfect development. Congenital disease is recognised by the existence of more or less pronounced cyanosis, dating from birth, and clubbing of the distal phalanges of the fingers and toes. The exact condition of the heart underlying these symptoms cannot with any certainty be made out; a more or less extensive communication between the auricles or ventricles, narrowing or atresia of the orifice of the pulmonary artery, and transposition of the large vessels, are among the causes of congenital heart disease. Although, generally speaking, there is no difficulty in recognising such a case, it may happen that the symptoms directly attributable to heart disease are so slight and unobtrusive that treatment is applied to the relief of complications without reference to the primary disease.

In children the action of the heart is most easily affected by the emotions; it is, therefore, a good rule to postpone the physical part of the examination until the child has got over the excitement of "seeing the doctor," and its confidence has been gained.

Dilatation of the heart during an acute febrile

attack may be sudden and extensive, and should always be looked out for. In no period of life may hypertrophy of the heart be so great as in childhood. This is well seen in cases of aortic regurgitation, the bulging of the left chest in long-standing cases being remarkable.

In children the heart complication most to be feared in the course of a rheumatic attack is pericarditis. There may not be much effusion, although the cardiac dulness is increased, the enlargement being often due to dilatation of the heart. It is often extremely difficult in acute cases to say whether the increased dulness is due to dilatation from carditis or to effusion into the pericardial sac; but when the apex-beat is outside the normal position and the dulness is up to, or even outside, the nipple line, dilatation is the most probable explanation. The object of the foregoing remarks is not to deny that effusion may occur, but rather that it is not the only cause of increased cardiac dulness.

Adherent Pericardium.—When the immediate danger of cardiac failure from acute pericarditis is past and the fluid—if any—absorbed, pericardial adhesion is the rock ahead. The adhesion may be between the two surfaces of the pericardium only, or also between the sac and the chest wall, the latter being the more serious. Besides the crippling effects of these adhesions upon the heart, changes of an inflammatory and degenerative nature frequently occur in the cardiac

muscle which favour dilatation; consequently we must note that hypertrophy and dilatation are among the after-effects of pericarditis. (See Case 20.)

Chorea.—It is pretty generally agreed that this disease is essentially rheumatic. As in rheumatic fever the heart may or may not escape damage, so in chorea. Further, the physical signs of endocardial lesion may be temporary or permanent. When the damage to the valve is not severe and subsequent compensation takes place, the patient may be in blissful ignorance of his condition until a medical examination for life insurance or some similar object reveals his condition. *Case 1:* Quite recently I was consulted by a gentleman whose application for a Government appointment had been declined "for heart disease." On examination a loud systolic bruit was heard in the mitral area and round to the left scapular angle. The only point in the history was that he had had chorea when a child. (See Cases 12 and 13.)

In children the joints and the heart are not always concurrently affected. A rheumatic pericarditis may precede the arthritic symptoms, and an endocardial lesion may develop or become recognisable many weeks after convalescence from rheumatic fever. Again, the rheumatic affection may be so slight as to attract little or no attention, and yet the effect upon the heart may be very serious. The following case is an illustration. A boy came under my care in May, 1895.

Two months previously he had had a slight feverish attack, with small nodules on his arms and legs, but no joint affection. The medical man who saw the patient diagnosed the case as rheumatic, and kept the child in bed for three weeks, although he did not appear to the parents to be really ill. On examination the heart was found to be considerably enlarged, the apex being in the fifth space in the line of the nipple. The heart's action was visible over a large area, a systolic bruit was heard at the apex and over the whole left side posteriorly, the second aortic sound was prolonged and roughened, signs indicating mitral regurgitation and probable aortic incompetency were present. (For full report see Case 6.)

Prognosis.—Difficult though it often is to forecast the issue of a case of heart disease, the anxious parent expects to be told when, and how far the child may recover, and, if recovery is impossible, the probable duration of life.

A thorough investigation must be made into the general condition of the patient, as well as into that of the heart. The evidence thus obtained, together with the personal and family history, provide the data for forming our prognosis.

The subject has two aspects, the immediate and the remote; in other words, the questions are:—What are the probabilities of the recovery of the child from an acute attack of cardiac inflammation, and, the patient having recovered

from the acute illness, what is the probable duration of life? In these, as in other questions, each case must be judged on its own merits.

In acute cardiac inflammation the signs of danger—anxious expression, quick breathing, cyanosis, and persistent high temperature—are seen pretty clearly before making any physical examination. If, in addition to these, there is physical evidence of serious heart and lung implication, the outlook is gloomy indeed. If, on the other hand, there are no present elements of danger, the prognosis, though necessarily better, must be always guarded, as complications may arise at any time.

In chronic cases the character of the lesions should be made out, but it must always be borne in mind that the loudness of the bruit does not of itself indicate the extent of mischief in the heart. The condition of the heart muscle is a more important question in prognosis than even the presence of a bruit at all. It is important to remember that contraction and adhesion of the valves as a sequel to endocarditis may occur some time after the acute illness has passed. Bearing the above points in mind, the following table may be useful:

Less Serious.

1. There has been but one attack of rheumatic fever.

More Serious.

1. There have been several attacks of rheumatic fever.

Less Serious.

2. The general health has been good since the fever.

3. The general nutrition is good.

4. The family history is good.

5. There is good compensation, the apex-beat is strong, the radials fill well, and do not too readily collapse.

6. The heart failure, if present, is recent; the liver is not much enlarged; there is no œdema of the lungs, no swelling of the ankles, no albuminuria.

7. The colour is good.

8. The digestion is good.

More Serious.

2. The general health has been indifferent, and the attacks have recurred at short intervals.

3. The general nutrition is bad.

4. The family history is bad.

5. The impulse is weak, the apex-beat diffused and feeble, the radials fill imperfectly, and some of the cardiac contractions do not reach the wrist.

6. There have been previous attacks of heart failure, the liver is below the umbilicus, the lungs inflate imperfectly and are dull on percussion.

7. There is cyanosis.

8. Food scarcely retained.

An approximate estimate of the condition of the myocardium may be arrived at by noting the

following. It is good when the apex-beat is well defined and is synchronous with the pulse, or at least numerically corresponds. If the second pulmonic sound, which had been previously accentuated, becomes weak, it is an indication of failure of the right heart. The history is often of distinct value in prognosis: for instance, if some few years have elapsed since the rheumatic fever, and the heart has hitherto borne the strain well, it is presumable that, in the absence of further attacks of rheumatism or other acute illnesses, the case will do very well.

Hygienic Management.—This is a matter of the greatest importance, and as its true value is not always appreciated by patients, it is the more incumbent upon the medical adviser to be definite in his directions. It is obvious that the circumstances of the patient will modify our directions, but parents will, as a rule, make any sacrifice for their child.

It may be taken as an axiom of special applicability in heart cases that the better the general health is maintained, the more will the damaged organ be able to combat with its difficulties. In the remarks on prognosis this point is insisted upon. No detail is too trivial if its observance will in any way help the patient.

The points to be considered are (1) Clothing, (2) Place of residence, (3) Diet, (4) Education, (5) Exercise, sports, and games.

1. *Clothing.*—Rheumatism has a great tendency

to recur, and each successive attack generally further damages the heart. The skin must be protected by woollen underclothing all the year through, though the weight may be varied with the seasons. Although freedom from recurrence of rheumatism for some years renders further attacks less probable, complete immunity can never be expected.

2. *Locality*.—In these days of suburban railways a locality fulfilling the requirements of the invalid of the family can be obtained in many cases without interference with his father's business. If a choice can be made a gravel subsoil should be selected; the house must not be surrounded with trees; it should stand at a fair elevation, with a gradual ascent at least on one side. A southern or western aspect is to be preferred. Valleys are objectionable, not only because the air is either damp and stagnant, or draughty, but also that it is inadvisable for the patient to have to make an ascent every time exercise is taken. Even in cases where exercise on rising ground is not only permissible but useful, it must be under control.

3. *Diæt*.—Indigestion in its various forms is very common in heart disease. On the other hand, pure indigestion is responsible for many symptoms which strongly simulate, or indeed are identical with, those observed in actual cardiac affections. The latter class may be explained by the nervous connection that exists between the

stomach and the heart, whereby gastric irritation may be the sole cause of cardiac irregularity. The frequency of dyspeptic symptoms in the course of heart disease is to be accounted for on other grounds. When the balance of the circulation is disturbed by valvular disease, or by any condition whereby the heart's action is interfered with, backward pressure is sooner or later exerted on the right side of the heart, which necessarily causes congestion in the other viscera. It is obvious that the functions of the stomach and the liver would be interfered with by this chronic engorgement, and digestive disability remain until treatment relieved the congestion and enabled the heart to encompass its difficulties. In those happy cases where compensation is practically complete, the patient may take ordinary food in moderation. Children are apt to take food or sweets at odd times, and this pernicious habit is sometimes encouraged by indiscreet parents. Food should be taken *at regular intervals*, and a rest afterwards for from ten to thirty minutes must be insisted upon. The character of the food must depend upon the state of the patient at the time. It may even be necessary to depend entirely upon pre-digested foods. No hard-and-fast rules can be drawn, but general directions may be given. Thus, anything which is liable to cause flatulence, such as farinaceous foods, the stalky parts of vegetables, salad, etc., had, as a rule, be better avoided, as also sweets and "made" dishes.

As regards stimulants,* there is still a deep-rooted prejudice in favour of the routine prescription of them in all cases of heart disease, even in children. As a broad rule, alcohol is not required, and when it is ordered the amount to be given each time should be specified, and the circumstances under which it is to be taken carefully laid down. In by far the majority of cases it is only in emergencies that alcoholic stimulant is needed. A heart may be worn out prematurely by being "kept up" with spirit. For a pick-me-up, milk, with the addition of a little saccharated lime water, is generally well borne by children; at other times the white of an egg, with water and lemon juice, will answer when milk is not tolerated. Where there is a tendency to faintness, beef-tea to which a small quantity of brandy has been added is very efficacious. Care must, however, be taken to discriminate between real faintness and the sense of sinking felt at the epigastrium which is caused by indigestion.

4. *Education*.—Parents and well-meaning friends, when they learn that a child has heart disease of a permanent character, sometimes question the desirability of going on with lessons, saying: "Why bother the child with lessons, when his probable span of life is so short?" I would urge most strongly that, with due consideration for the child's strength, education should not be inter-

* "The Rôle of Alcohol in the Treatment of Heart Disease," 'The Lancet,' 1895.

rupted. The child must be carefully watched to see that the health is not injured thereby. If irritability of temper or sleeplessness follow the lessons, they must be considerably curtailed.

It must be remembered that the improvement which follows treatment in heart cases is at times marvellous, and with children the most gloomy forebodings are not infrequently falsified. Again, occupation of the mind keeps the patient from dwelling too much on his illness. To see other children romping about is less trying when the invalid has something to look forward to every day which interests him. Above all, if the child has a hobby it should be encouraged, so that in times of weariness life may be more tolerable. As to the children of the poor they must, when unfit to attend school, be protected from the importunities of the School Board Inspector by a medical certificate.

5. *Exercise, Sports, and Games.*—It is a serious thing to debar a child from outdoor games, unless there is a real necessity for so doing. This is sometimes done in order to be on the right side, when, although no definite structural disease exists, the heart is judged to be weak. Entire abstention from sports should not be ordered in such cases until two or more examinations have been made. On the other hand, there are cases where to allow anything beyond moderate exertion is but to court disaster. Too much importance must not be attached to a slight irre-

gular action of the heart only, as it may be due to indigestion from improper or excessive food.

When a child is convalescent from an illness where the heart was involved, gentle exercise should be allowed; but the character and amount must be carefully prescribed, and the effect upon the heart watched. The absence of a murmur during or soon after a rheumatic attack is no guarantee that the heart has escaped all risks of organic disease, since valvular disease may not be in evidence until some weeks have elapsed. For instance, the effects of a pericardial adhesion are not immediately apparent; and, again, mitral stenosis is for the most part a consequence of endocarditis, with subsequent adhesion and contraction of the inflamed membrane.

The heart should be examined at intervals for a year at least after the rheumatic fever has subsided, in order to determine what exercise is advisable and salutary. (See Case 9.)

It is obviously impossible to formulate rules of more than general application; but there are some forms of exercise which are bad for all cases of organic heart disease, such as swimming, football, racing, paperchases, etc.—games which demand sustained competitive or sudden exertion. Bicycling entails but little exertion, provided the gearing is moderate, the pace easy, the road level, and the distance well within the capacity of the rider. Cycling, however, had better be avoided in aortic regurgitant cases. Walking is a good exercise,

but children are apt to exhaust all their strength on the outward journey, and not to give in until they are obliged. The "Whiteley Exerciser" is useful for indoors. The advantage of this and similar exercises, where the resistance is due to the recoil of india rubber, over those where a weight has to be pulled up over a pulley, is that, in the latter, the strain is at its maximum at the commencement of the pull, whereas in the former case the resistance is at first slight, and gradually increases with the contraction of the muscles. As the muscular effort required for using this exerciser increases with the tension of the rubber, the strain can be regulated to a nicety, every few inches the patient advances from where the apparatus is fixed making a greater demand upon the heart. The number of exercises and their frequency have to be prescribed and modified from time to time as the case goes on.

Exercise requiring fixation of the chest, as in rowing, is bad in heart cases. Bicycling is not open to this disadvantage, in that it allows free movement of the chest, and the patient is, moreover, relieved of the fatigue of walking, and he inhales fresh air freely. It is a good plan for the medical attendant to try the effect of a few "resisted exercises" on the patient before giving directions for the home treatment, noting the position and force of the apex-beat, the character and frequency of the pulse, and, as far as possible, the area of cardiac dulness both before and after.

By these means valuable information may be gained as to the behaviour of the heart when called upon for extra exertion. The great point is not to attempt too much at the beginning of treatment. (Case 18.) It is at times well to be content with simple movements of the extended arms over the head; this form of exercise is particularly useful in early convalescence from acute cardiac inflammation.

Exercises should not be taken soon after meals, an hour at least being allowed to elapse. Cardiac patients are liable to flatulent distension of the stomach, and it is better to direct one so affected to wait until the flatus has been expelled before taking his exercise.

An unsigned article in the March (1899) number of 'Blackwood's Magazine,' entitled "Physical Education in Schools," contains much valuable matter, and will well repay a careful study. The following extract is of special interest in the consideration of our subject:—"Much evil often results from asking a boy who may be physically weak to do much either in gymnastics or football. Every boy, on entering school, should undergo a thorough medical examination; and special notice should be taken of the condition of his feet, teeth, eyes, chest, heart, and spine, as well as his general muscular development, and of any malformation of his system. On the basis of the medical report the gymnastic instructor, and those in charge of the

school games, should classify boys into sets, according to their physical condition; and in special cases, such as very poor muscular development, hollow chest, or weak heart, they should further consult with the school doctor, and, subject to his advice, draw up a special course of training to suit the particular case in question. The headmaster, or some responsible substitute, should draw up a list of boys divided into three groups: (1) those physically fit to engage in the complete system of school training, who are keen, active, and interested in their own development; (2) those physically fit, but who by nature are lazy and slovenly, and quite regardless of their own growth and physical improvement; (3) those who from some bodily defect or weakness are undergoing a special training. The purpose served by such a list will be obvious. Careful and accurate measurements of the height, chest, weight, biceps, forearm, and head should be made, and the weight ascertained not less than four times a year, and in the case of weak and ill-developed boys more frequently. . . . It has already been said that a proper scheme of physical exercise should be drawn up for each school; but it is equally important to see that this scheme is strictly adhered to, and that all forms of exercise are performed under skilled direction and supervision. In gymnastics the instructor has to weigh and consider three chief points, the physical condition of each set of pupils, the nature of gymnastics

best suited to each set, and the time per week allotted to gymnastics.”

Cardiac Therapeutics.—We are in most cases able to prescribe our remedies with a fair assurance of obtaining definite results. The pharmacology of drugs acting on the heart muscle and those which modify blood-pressure has been so ably worked out, that a rule-of-thumb manner of using them is inexcusable. It is a very great mistake to prescribe digitalis simply because a bruit has been discovered, and more serious still to increase the dose of the drug in proportion to the loudness of the murmur. When the heart is acting well, and good compensation has been established, as shown not only by the position of the apex-beat, but also by the absence of signs of backward pressure in the lungs, liver, etc., drugs that would further stimulate the heart are positively harmful. Take, for instance, a case of mitral stenosis, where the murmur is loud and long, and the second pulmonic sound is much accentuated. If these physical signs are not associated with any evidence of failure of the cardiac chambers, the effect of routine treatment by digitalis upon the heart would be to stimulate the myocardium to increased effort; the endeavour of the right ventricle to force the blood through the lungs more rapidly would probably lead to hæmorrhage from the pulmonary capillaries, and the left auricle as well as the right ventricle would probably further dilate. The treatment of such a

case, where the difficulties of the circulation are being met so far as it is possible for them to be, should be directed to the maintenance of the existing state of affairs by judicious advice as to the manner of life to be led, and by attention to the general health. The heart should be carefully examined at intervals, especially when any signs of downward progress—such as increased or increasing dilatation, liver and lung engorgement—begin to make their appearance. It is probable that at this time the presystolic bruit at the apex is *less* loud and the accentuation of the second pulmonic *less* pronounced—signs of bad rather than of good omen. Now is the time of all others that drugs of the digitalis group assert their value and form a necessary element in the treatment.

As a preliminary to the use of digitalis, a free purgation is very useful; and leeches to the præcordium, or even venesection, may with advantage be resorted to when there is cyanosis. The effect of these remedies upon the heart and circulation should be carefully watched. When large doses of digitalis are called for, it is well to restrict the patient to the recumbent position.

Mercury, in one form or another, is as valuable for children with heart disease as for adults. When a rapid relief to the liver is required, hydr. subchlor. in small and frequently repeated doses, until the bowels have been freely acted upon, is a very useful way of administering the remedy;

at other times hydr. c̄ cretâ answers the purpose.

The digestive organs will require frequent attention, for gastro-intestinal troubles are commonly met with in heart disease, especially in the later stages. The skill of the physician is at times severely taxed in relieving the symptoms of associated indigestion, depending upon the chronic congestion of the chylopoietic viscera, which so commonly is present in heart cases of any length of standing. Another and important cause of nausea and vomiting in cardiac cases is the use of digitalis in too large doses, or—which is more common—the continued use of the drug for a lengthened period *without intermission*. The indications for treatment under these circumstances are obvious. (See Case 19.)

Nux vomica is a very valuable drug, but it must be given in small doses and under watchful medical supervision only. I have seen very unpleasant symptoms follow the use of this remedy beyond the prescribed period. When the drug is required for a lengthened period it is advisable to leave it off for a few days every now and then.

Alcohol is at times a useful remedy in some stages of heart disease, but it is, as a rule, not only unnecessary, but positively harmful. In a paper already referred to (page 16) I fully set forth my views on this subject. Further experience has only confirmed the opinions expressed in that paper. The arguments there brought forward

against the routine use of alcohol in the treatment of heart disease generally apply with increased force in the case of children.

Belladonna applied externally does sometimes relieve cardiac pain; but, as plasters interfere with auscultation, the liniment is a better form to employ in cases requiring constant observation.

Nauheim baths being more useful in arteriosclerosis,—a condition rarely occurring in children—the application of this mode of treatment is not often called for in the young. The exercises will be found useful in appropriate cases. It may be noted that the use of exercises is no new revelation, their value having been recognised for many years. (See Cases 15, 16 and 31.)

PART II.

INDIVIDUAL ILLUSTRATIVE CASES.

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Heart Symptoms due to Improper Feeding.

—*Case 1.* F. C—, a little girl aged eleven years, came under my care in March, 1895. She had been ordered to keep away from school because the heart was weak, and I was to decide whether this was necessary. The patient complained of feeling weak and easily becoming tired, and of occasional pain in the left side. There was no history of any previous illness beyond a little bronchitis. She was an only child, and indulged in

every whim. She had her meals with her parents, and was allowed to sit up late.

On examination all the organs were found healthy. I ran the child up some stairs and found the heart fully equal to the strain. Common-sense directions were given as to diet and sleep, the digestive organs attended to, and the child sent back to school. Later accounts showed the advice to have been sound.

The Question of being allowed to join in Sports.—*Case 2. B. R—*, a boy aged eleven years, was sent to me by Dr. Masters, of Kensington, in April, 1898. There was a history of a little rheumatic gout in the parents, but otherwise the family was healthy. The patient had never been robust, but had not had any serious illness; there was at times gravel in the urine. On medical advice the boy had been prohibited from school and games. Dr. Masters, however, had allowed school, but prohibited games. The question now was whether the latter might be resumed. On inquiry it was found the child had never been blue or exhausted after running, nor shown any signs of distress after exertion. On examination the heart's apex was in the fifth space half an inch inside the nipple line; the action was strong and regular; there was no bruit. On running the child upstairs a soft systolic bruit was heard at the apex, which, however, disappeared in two minutes. I advised that the boy should resume the less violent games,

and that a periodical examination of the chest should be made.*

The first case was purely one of indigestion and coddling; the second patient's heart was prone to yield to extraordinary strain. The former was sent back to school with no special restrictions, while the latter was to take exercise in moderation and to be kept under observation. Both cases have done well.

What are the chief signs of cardiac distress for which parents or other custodians of children may be on the look-out?

1. Palpitation.
2. Breathlessness, especially if easily provoked.
3. Cyanosis.
4. Hæmoptysis, indicating pulmonary congestion and increased strain at the right side of the heart—common in mitral stenosis.
5. Pallor, showing failure on the systemic side. This is most prone to occur in aortic cases, leading to faintness or actual syncope. It may be briefly stated that cases of mitral stenosis and of advanced regurgitation bear strain badly, moderate aortic stenosis or regurgitation better.

Faintings, in churches and hot rooms, are not uncommon in the less robust children, and are a cause of anxiety to their parents from the fear that heart disease is the cause. That these attacks may be cardiac in their origin is doubtless

* Recent inquiry has shown that the patient is doing well, and that the cardiac sounds are normal.

true, but a critical examination of the heart quite frequently gives a negative result. Some cases can be explained by the child having hurried to church soon after a heavy or indigestible meal, by intestinal worms, and the petit mal of epilepsy, or by albuminuria. But, after eliminating these and other possible causes, the faintings are in many cases inexplicable, except on the theory of air hunger, due to a cardiac lesion. The chest should, in doubtful cases, be re-examined at intervals.

If at any of the examinations the attacks of faintness are found to be due to functional or organic affection of the heart, appropriate treatment must be resorted to. In all cases, whether traceable to heart disease or not, the child should not be allowed to go into hot or close rooms. It may be advisable to provide the patient with smelling salts.

Pulmonary Stenosis undiagnosed, Secondary Bronchitis only recognised.—*Case 3.*

A. B—, a girl aged ten years, came under my care at the Farringdon General Dispensary in 1893 for a cough that had hitherto resisted treatment. The mother said she had always been told that her child suffered from chronic bronchitis, and that the cough and difficulty of breathing were due to this disease. Examination of the chest gave signs of bronchial catarrh, the sounds becoming more moist as the bases were approached. To the left of the sternum, at the

second and third spaces, an exceedingly loud booming bruit, systolic in time, was heard, its source being evidently a stenosed pulmonary artery. Treatment was chiefly directed towards the avoidance of undue strain on the circulation, and, as a consequence, the pulmonary signs cleared up and the cough abated. There was very little cyanosis at any time. The cause of the intractable cough in this case was undoubtedly primarily due to the circulatory difficulty, for as long as the child was prevented from taking any violent exercise the pulmonary symptoms were kept in abeyance.

Aortic and Mitral Disease: Symptoms appearing twenty years after Chorea.—*Case 4.* G. D—, a man aged twenty-eight years, was admitted into the Hospital for Diseases of the Heart for dyspnœa, palpitation, and pain below the ensiform cartilage. He was in his usual health until fourteen months before, when, on attempting to rise in the morning, he found he had paralysis of the right side and loss of speech: he recovered from the latter in three weeks and from the hemiplegia in three months. The history was briefly as follows. He had had chorea twenty years ago and right hemiplegia with aphasia fourteen months ago, hæmoptysis eight months ago, and œdema of the legs five weeks ago. He had always worked hard, and for the last four or five years had drunk heavily. On examination the lungs were found to be healthy; the heart was

considerably dilated and the impulse heaving ; the apex-beat was diffused and most marked in the fifth space, three quarters of an inch to the left of the nipple line ; there was a coarse systolic thrill at the apex, a presystolic and a systolic mitral bruit at the apex, and a reduplicated second sound over the cardiac area, especially over the pulmonic valves. At times three or even four feeble beats succeeded the systolic mitral bruit, owing to imperfect contractions. This patient was quite unaware of there being anything wrong with him until an embolus was washed off his mitral valve and caused hemiplegia : thenceforth signs of heart failure grew apace. The valve lesion thus had its origin in chorea twenty years previously, and caused no interference with the man's capacity for hard work until dilatation supervened. It is probable that had the patient lived a steady life he would still have been ignorant of his having any heart affection.

Since the above was written the man has died. The results of the necropsy were as follows :— The heart was almost circular in shape, all the cavities were enlarged, the apex was formed equally by both right and left ventricles, and its weight was seventeen and a half ounces ; the aortic valve was incompetent, the segments were thickened, rigid, and calcified ; the aorta and right coronary artery were somewhat atheromatous ; the mitral valve was thickened, with a button-hole slit three-quarters of an inch in length, just admitting

the little finger; the left auricle was large, with markings on the inner surface; and the tricuspid orifice was five inches in circumference. The right lung had a recent infarct two inches in diameter, its base was compressed, and there was much fluid in the pleural cavity; the left lung was œdematous. The liver was enlarged. The kidneys were fairly normal. These notes were taken by Dr. F. S. Wood, the house physician.

Mitral Disease: Symptoms mostly of Neurotic Origin.—*Case 5.* F. L—, aged thirteen, an out-patient, presented herself on September 8th, 1898, complaining of pain in the left side, provoked by exertion. Three weeks before she had fainted, but had not completely lost consciousness; she had been out of health for two years, and had been treated for anæmia; during this period of debility she had shed her finger and toe-nails. She was very nervous and excitable; when frightened she became blue; she had “growing pains” in her legs occasionally; had never menstruated, and had had neither rheumatic nor scarlet fever nor chorea.

Both parents were highly excitable, the father's temper being violent and uncontrollable; a brother, aged ten, was very nervous; and a cousin, seven years, had chorea. The child had a dark complexion and a bright colour, which however, gradually faded away as her confidence was gained. Heart's apex, fifth space, just inside nipple line; no increase of cardiac dulness; a

loud blowing systolic murmur was heard at the apex, which faded to the left, and was lost on reaching the posterior axillary border; no accentuation of the second pulmonic sound; pulse irregular, its rate varying even during a minute's observation. Diagnosis: An irritable heart, some little dilatation, and a small amount of mitral regurgitation. Prognosis as regarded the heart was favourable.

The child was ordered to be away from home as much as possible, not to be mentally overworked, and to have plenty of fresh air and liberal feeding. Iron, *nux vomica*, and a small quantity of *digitalis* were directed to be taken thrice daily, and valerianate of zinc every night. The patient went to the Channel Islands for a long visit, after which it was found that she had gained weight, her general health had much improved, but the cardiac signs were unaltered. Later on, in consequence of frequent outbursts of temper in the father, the child became very nervous, and she was then put on *asafoetida* and valerian for two weeks, after which time the original medicine was resumed. The general health improved, and I did not see the patient again until March, 1899—six months after her first visit. On examination I found the murmur completely gone. I then listened with the patient lying down, but still heard no morbid sound. I was about to note the case as one of cured mitral regurgitation when I thought I would listen once more; at this time

the murmur was as loud as ever. I prolonged my examination, and I found the murmur came and went without any apparent cause.

This case presents many points of interest. (1) The strong neurotic history; (2) the absence of the ordinary causes of heart disease; (3) a long period of ill-health, the malnutrition showing itself in the perishing of the nails; (4) the muscular weakness, as expressed by "growing pains" (an absurd term, for how can there be pain in normal growth?); (5) the absence of accentuation of the second pulmonic sound, giving evidence that if there was actual regurgitation through the mitral valve, it was neither extensive nor of long standing; moreover, there were no signs of dilatation of the right heart; (6) the observations made at the last visit pointing to some neuro-cardiac state in which the musculi papillares were irregularly contracted. "Growing pains" are at times due to subacute rheumatism, which may provoke actual cardiac disease. It is well in all such cases to look out for rheumatic nodules. These nodules are, in some cases, the only evidence of the rheumatic state.

Valvular Disease consequent upon Nodular Rheumatism.—*Case 6.* A. K—, a boy aged five years, came under my care on May 7th, 1895. The boy's mother stated that the boy's breath became very short on any exertion, and that at times he was slightly cyanosed. The child looked ill and delicate.

History.—Two months before he had had a feverish attack, accompanied with nodules on the arms and legs, when he was kept in bed for three weeks. During the whole illness, though he had had some pyrexia all through, there had never been observed any pain or swelling of the joints. In fact the nodules alone gave the clue to the true nature of the case. Both parents were healthy, but three aunts—one paternal and two maternal aunts—suffered with rheumatism.

On examination the area of cardiac dulness was increased in all directions. The apex was in the fifth space, nipple line. A soft systolic murmur was audible from one inch to the right of the nipple line to the left anterior axillary line. The second pulmonic sound was accentuated. Lungs normal. Liver a little enlarged. Tonsils enlarged. Pulse 84, regular, tension below the normal.

Diagnosis.—Mitral regurgitation with commencing cardiac failure.

Prognosis.—Guarded.

The indications for treatment were—rest (in the fresh air when possible), careful dieting, with cardiac and general tonics.

May 29th.—Had steadily improved, and had gained one and a half pounds.

June 6th.—Not looking so well, had lost one and a half pounds in weight, and he had several nodules on his arms and legs. There was no pyrexia. Ordered salicin in 5 gr. doses.

June 11th.—Nodules had rapidly disappeared

under the salicin. Child looked better and had recovered a little weight. On examination a systolic murmur was heard at the aortic area and propagated to the right.

August 1st.—He had had a long stay at Margate, and he had gained over one pound in weight. Physical signs as before. To commence resisted exercises. From this time the patient steadily improved, and by October the aortic murmur had entirely disappeared. He had, however, rheumatic pains in the legs for two days.

April 13th, 1899.—The patient's condition was very satisfactory, he had no symptoms, the area of cardiac dulness was diminished, the aortic sounds were clear, and the mitral bruit was only heard when the boy was lying down. Had acute tonsillitis.

Remarks.—There can be no doubt that rheumatism was the cause of all the trouble in this case. Although, with the exception of two days in October, 1896, there were no rheumatic pains during the four years the patient was under observation, yet the heart suffered. The further progress of the case was to be watched with considerable interest, not unmixed with anxiety, for it was probable that there was already some mitral stenosis at the last time of seeing him, and, of course, he might have further attacks of rheumatism.

Double Mitral Disease, illustrating the consequences of want of care in early Con-

valescence after Rheumatic Fever.—*Case 7.*

A. H—, a boy aged eleven, was admitted into the Hospital for Diseases of the Heart, September, 1897, suffering from dyspnœa, palpitation, and œdema of the ankles.

History.—Rheumatic fever at seven years; his breath was noticed to be short a few weeks after he got about. No other acute illness.

Condition.—Was thin, complexion clear, ankles swollen, cardiac region much more prominent than the opposite side, action of heart visible over a large area and heaving in character. Cardiac dulness was increased in all directions, being as high as the second space, apex-beat sixth space, half an inch outside nipple line. An ill-defined thrill just to the right of the nipple. A loud systolic murmur at the apex and round to the left scapular angle, but heard more or less distinctly all over the chest, both back and front. To the inner side of the nipple line at the level of the fourth and fifth cartilages there was an area of reduplication of the second sound, which on moving the stethoscope more to the left, melted into a diastolic roll; there was accentuation of the second pulmonic sound. Liver down to within half an inch of the umbilicus. Urine normal. Pulse 96, variable.

This was a fairly typical case of mitral disease—stenosis and regurgitation—which might be expected to improve much under treatment. The points to be noted are (1) that “the breath became

short a few weeks after the boy got about," showing the importance of not only giving instructions for the after-management of a patient who has apparently recovered from rheumatic fever, but also the necessity of examinations of the heart being made at intervals for some months after convalescence. This is difficult to carry out in hospital practice, for it is surprising how parents will allow their children to drift into serious illness before seeking advice. It is to be noted that contraction and adhesion of the mitral curtains may follow an endocarditis after the patient has got about, and thus put an entirely different aspect on the case. (2) An area of reduplication of the second sound at or near the apex is very suggestive of mitral stenosis. (3) The length of time occupied in this case by the pre-systolic murmur—namely, nearly the whole of the diastolic period—was an indication of the severity of the stenosis.

Extensive Heart Disease ; frequent attacks of Rheumatic Fever.—*Case 8.* P. J—, aged fourteen, came as an out-patient to the Heart Hospital in May, 1897, complaining of cough, dyspnœa on the slightest exertion, palpitation, and great weakness.

History.—He had had rheumatic fever four times,—at seven, nine, ten, and thirteen and a half years ; his mother had had rheumatic fever.

Examination.—The boy was very pale ; action of the heart was heaving and tumultuous, and

was visible over a large area; the whole of the left side of the chest projected, and was pushed forwards considerably at every beat. The cardiac dulness extended from one and a half inches right of the mid-sternal line to the outer border of the left axilla, and upwards to the upper border of the third rib. Loud bruits were heard all over the chest, both back and front, and they were a double aortic and mitral systolic. Liver enlarged and some crepitations at the pulmonary bases.

Remarks.—This was an instance of a child having had four attacks of rheumatic fever before fourteen years, and it illustrated: (1) a difficulty in prognosis in a heart case until some time has elapsed after the first rheumatic attack. In the table under "Prognosis" this point is insisted upon. (2) The ability of a child to stand against a number of serious illnesses, and (3) how the heart may go on for some length of time, meeting fresh difficulties as they arise, and only yields when its nutrition fails. The patient improved to a certain extent during the three weeks he attended, when, doubtless from inability to come, I lost sight of him.

Rheumatic Valvular Disease; absence of Symptoms for eleven years.—*Case 9.* F. D—, aged seventeen, a draper's assistant, came as an out-patient, September, 1897. He complained of pain in the region of the heart and dyspnœa on exertion.

History.—Rheumatic fever at seven years, and

again a year afterwards. He had had no symptoms of any heart trouble until after the second attack, and these had speedily passed away. He had remained very well until two weeks previously, when his present symptoms appeared.

Examination.—A well-nourished lad; sallow complexion; no œdema of ankles. Cardiac dullness extended to half an inch left of nipple line; apex-beat, fifth space just inside of nipple line; a soft systolic murmur heard at the apex, but not audible beyond the anterior axillary line.

Diagnosis.—Mitral regurgitation, not severe, with good compensation but commencing failure of it. Prognosis good if the patient could take care of himself.

Treatment.—Absolute rest—in bed, if possible—for a fortnight, and an iron tonic with digitalis. At the next visit to the hospital the symptoms had disappeared, and a holiday was advised.

Remarks.—This lad's heart disease had probably never been severe, and the compensation was so adequate that he had gone through his early youth in happy ignorance of there being anything wrong with his heart. The long hours of standing, the confinement, and the lifting of heavy parcels inseparable from a second-class drapery shop in London soon reminded him of his infirmity. This case illustrates the importance of considering the social position of the patient in prognosis. If this youth could take life easily, rest when tired, lie up whenever he took a cold, and

generally act up to medical instructions, it is quite probable that he might live to a good age, whereas he will have to struggle on as well and as long as he can.

The two following cases of **congenital heart disease** illustrate how these may be capable of improvement.

Case 10. B. U—, a girl aged fourteen years, came under my care at the hospital on May 13th, 1897. She complained of pain over the heart, dyspnœa on slight exertion, pains in the legs, and œdema of the ankles at night. She had been troubled "with her heart" since birth; she had spit blood a year before. No history of rheumatism in either parent.

Examination.—The child was a little cyanosed, was thin, and had an anxious expression. The heart was visibly enlarged, and the heaving action of the organ could be seen in all directions. The cardiac dulness extended from the parasternal line on the right to the mid-axillary line on the left side. A thrill, systolic in time, was felt at the apex, and also midway between the parasternal line and the costal margin of the sternum. A systolic bruit, with a diastolic roll, was heard at the apex, and again on the right side where the thrill was felt; the former, though loudest at the apex, was heard more or less all over the chest. The apex-beat was apparently under the sixth rib and in the anterior axillary line. Liver enlarged. There were râles in both lungs.

The child looked very ill. She was ordered rest, careful dieting, and, as a medicine, ether, digitalis, and nux vomica. In a week the patient was better, in another week the feet had ceased to swell, and by June 10th the child was in as good health as she had been for a long time.

Remarks.—This was in all probability a case of *patent foramen ovale* with extensive secondary changes in the heart. From some cause the chambers yielded and additional symptoms followed. These, however, had not gone too far to render the case hopeless. Although the treatment of congenital heart disease is not, as a rule, very satisfactory, yet life may sometimes be prolonged for several years by care and prompt treatment of complications as they arise.

Case 11. M. W—, a little girl eleven years of age, was first seen on April 10th, 1894. Her mother stated that nothing out of the way was noticed until the child was six months old, when a little duskiness was observed when she screamed, later on she became blue when taking food.

Family history.—Two paternal aunts developed heart disease when between thirty and forty years of age without any assignable cause; both parents healthy.

Examination.—The heart was considerably enlarged, the dulness extending from three quarters of an inch to the right of the sternum to the left anterior axillary line; apex-beat in the sixth space just outside the nipple line; a systolic murmur

was heard more or less loudly all over the chest, the spot of maximum intensity being the sternal border of the fourth space on the left side. Liver a little enlarged; the finger-nails blue.

Remarks.—This was a case of congenital heart disease of a less serious character than the previous one. No special treatment was called for, since the heart was able to bear the strain of ordinary exercise without much distress. Full directions were given to the mother, and she was told to seek medical aid without delay whenever the child caught cold or was at all ill.

Mitral Stenosis after Chorea; Pulmonary Apoplexy.—*Case 12.* G. S—, aged nineteen years, was admitted into the Hospital for Diseases of the Heart on November 12th, 1897. He complained of palpitation, dyspnœa on exertion, pain in the chest, nausea and frequent attacks of blood-spitting.

History.—Eczema at nine and chorea at thirteen years. He stated that he had been well until he caught cold seven weeks previously.

Examination.—Complexion pale, with malar flush; no arterial or venous pulsation; pulse 96, irregular; arteries soft and yielding; heart's apex-beat sixth space, $8\frac{1}{2}$ cm. from mid-sternal line and 1 cm. from nipple; impulse diffuse and heaving. Cardiac dulness, upper limit third rib, left 10 cm. from parasternal line (an imaginary vertical line midway between the margin of the sternum and the line passing through the nipple), right 10 cm.

from mid-sternal line ; there was a thrill and bruit at the apex, both presystolic in time, also an ill-defined systolic bruit in the mitral area ; action irregular ; the second pulmonic sound was accentuated. Liver enlarged. Urine, specific gravity 1030, no albumen. Lungs, right apex dull, expiratory murmur prolonged with small crepitations.

Diagnosis.—Mitral stenosis with hæmorrhage of recent date into the apex of the right lung.

November 27th.—Breathing embarrassed ; right apex appeared to be blocked ; large crepitations (blood?) Temperature 98.6° .

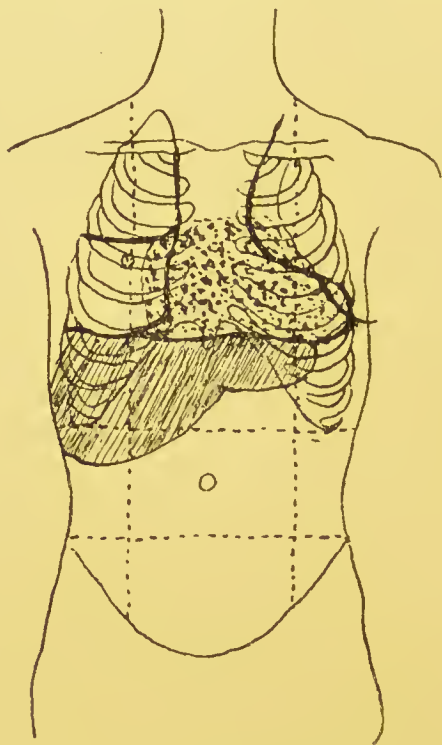
In the night the patient coughed up three ounces of blood ; breathing became easier ; temperature 99.8° .

During the following three weeks he had occasional attacks of dyspnœa. The temperature showed great oscillation, and on December 19th it reached 100.2° , and he complained of pain across the chest. The temperature by December 29th was 101.8° , and there was rusty and bloody expectoration. Examination of the sputum gave no evidence of tubercle bacilli. The whole of the right upper lobe had physical signs much similar to those in phthisis ; thus, it scarcely rose in inspiration, the breathing was bronchial, and there were crepitations. The sputum was again examined, with a negative result.

On December 31st the temperature had gone up to 101.2° ; the patient complained of pain over the ileum ; breathing hurried and thoracic ;

tongue coated, but no sickness; micturition painful. Ordered hydr. subchlor. in 1-10th gr. every fifteen minutes until the bowels had been freely acted upon, and then bismuth mixture *ter in die*.

On January 4th the temperature, which had



The organs *in situ* as they appeared at the P.M.

varied greatly the last three days, reached 103.6° , but by the following day it had fallen to normal. In the absence of any more definite cause for the pyrexia it seemed probable that the patient had gone through an attack of influenza. Severe night

sweats ensued. Zinci ox. gr. 3 was ordered every night. There were never any rigors, neither was the spleen enlarged. The question of infective endocarditis was discussed from time to time, but the evidence was at no time sufficient to warrant a diagnosis of that disease.

On February 8th the patient was again sick; urine contained albumen and blood-casts; sputum contained blood; temperature subnormal.

On February 12th the cyanosis which had appeared on the lips and fingers became general, and the stomach rejected every form of nourishment. Ether and strychnine were subcutaneously injected, and enemata of beef-tea with brandy rallied the patient, but the temperature, which had fallen to normal, rapidly went down to 96°, and he sank on the night of the 13th.

For the drawing and notes of the post-mortem I am indebted to Dr. Gibbs who made the investigation in my presence twenty hours after death.

The drawing shows the position of the organs *in situ*.

Liver.—Much enlarged, markedly nutmeg in character, with patches of fatty degeneration.

Spleen.—Passively congested and fibroid.

Kidneys.—Passively congested; no infarcts.

Peritoneum.—Large quantity of clear fluid.

Pleuræ.—No lymph or adhesions; cavities contained about a pint of clear fluid each.

Pericardium.—No adhesions; about 12 ounces of clear fluid.

Lungs.—Both were very œdematous and congested throughout; there was some old-standing thickening at the right apex, and about the middle of the anterior border of the upper lobe of the right lung. An infarct about the size of a walnut was situated under the second right costal cartilage. There was no surrounding pneumonic consolidation.

Heart.—Exposed portion six and a half inches in line of fifth ribs; right border three and a half inches from mid-sternum; lower border encroaching slightly on the epigastrium, apex under sixth rib in the anterior axillary line.

Right auricle much distended and thinned generally; muscoli pectinati and auricular appendix hypertrophied; veins on the surface of heart engorged.

Right ventricle engorged, hypertrophied and dilated. Relation of right ventricle to left—1-2; pulmonic valves normal; tricuspid valve insufficient—admitted four fingers.

Left ventricle empty; semilunar valves normal (held water); mitral valves adherent and fibro-cartilaginous—a button-hole shape.

Left auricle very much dilated and thinned; auricular appendix hypertrophied and very much elongated; cartilaginous deposit on the auricular surface of the valves.

Remarks.—This case is introduced to show—(1) the serious consequences that may follow chorea after some years of apparent escape from

heart complication, for the patient was unaware that he had any organic heart disease until a severe cold brought him under medical supervision. It was probably in the early days of this cold that the right ventricle had extra work thrown upon it, and hence the hæmoptysis, though the physical signs at the right apex on admission suggested the possibility of the co-existence of tuberculosis with mitral disease. (2) The infective endocarditis theory. There was a good deal to be said in favour of this—the fever, pain over the ileum, etc. On the other hand, there had never been rigors, and the spleen was at no time enlarged; moreover, the urine was free of albumen until the last few days of the illness. (3) The post-mortem confirmed the diagnosis. (4) It is very probable that cardiac symptoms appeared earlier than the history would indicate—the explanation being that their significance was not recognised. Young adult patients, if they have the buoyancy natural to their time of life, are prone to minimise their sufferings, and so mislead the inquirer if he fail to carry his investigations to a proper conclusion.

Aortic Stenosis after Chorea; Right Hemiplegia from Embolism — *Case 13.* Alice B—, aged six years, was admitted into the hospital on September 15th, 1898. The symptoms were jerky choreic movements, loss of power of speech, and difficulty in swallowing.

History.—The child had been well until about

a month previously, when she had had a fright and lost the use of her right arm and leg. Shortly afterwards she had lost her speech. The choreic movements had developed about a fortnight before.

Examination.—Patient was fairly nourished, complexion pale, pulse 88, regular and feeble. Apex-beat fifth space, two inches from mid-sternal line and half an inch internal to nipple. Cardiac dulness—upper limit third left rib, left limit three and three quarters of an inch from mid-sternal line, and right limit a quarter of an inch to the left of the same line. The only morbid cardiac sound was a soft systolic murmur in the aortic area and conducted towards the neck. Urine normal; no enlargement of liver; lungs healthy.

Diagnosis.—Chorea with aortic stenosis.

Treatment.—The child was given a purgative and then liq. Fowleri ℥iij, with syr. ferri phosph. thrice daily, and she was ordered a liberal diet.

On October 13th it was noted that the child had been steadily improving; could talk a little, feed herself, and stand alone for a short time.

November 7th.—All the choreic symptoms had gone; cardiac murmur as before, and she was sent to a convalescent home.

Remarks.—(1) Chorea as a cause of heart disease has already been illustrated. The interesting points in this case were—(a) right hemiplegia immediately following a fright, (b) loss of speech after an interval, and (c) the development

of choreic movements two weeks after the hemiplegia. (2) A mitral systolic murmur is the usual cardiac physical sign found in chorea. In this case the murmur was limited to the aortic area, and could be traced only upwards.

Unrecognised Scarlet Fever, Albuminuria, Dilated Heart.—*Case 14.* T—, aged two years and ten months, came under my care on September 14th, 1895, complaining of general ill-health and of a hard swelling at the angle of the jaw on the left side. At this time no definite history of any acute illness could be obtained. Subsequent investigation elicited the fact that many cases of scarlet fever had been removed from the immediate neighbourhood of the boy's home. Beyond some enlargement of the tonsils the throat was normal. There was adenitis at the left side of the neck. There was a high temperature, abundance of albumen in the urine, besides a large number of hyaline and blood casts. The urine speedily became dark from the presence of blood. Examination showed much fulness over the præcordium, a systolic murmur was heard all over the increase of the præcordial dulness, especially to front of the left chest below the third rib and in the axilla, there was a mid-diastolic bruit at the apex, and accentuation of the second aortic sound.

The urine remained sanguineous for a considerable time, and as the child became excessively anæmic measures had to be taken to check the bleeding. The usual styptics had no effect, but

sp. terebinth. in five-drop doses every four hours at length arrested it. The heart was examined daily, and it was interesting to note the rapid increase in the cardiac dulness and its subsequent gradual diminution. As the child got better the mid-diastolic bruit became inaudible, but the systolic at the apex remained. The inflamed gland had to be incised and scraped. The patient left the hospital for a convalescent home; his urine was then absolutely normal, the cardiac dulness was but slightly increased, but the mitral systolic murmur was still clearly audible. Five weeks after his discharge from the hospital I examined the chest and found the murmur still present, though less pronounced. The child was the picture of health.

In March, 1899, in consequence of several glands in the neighbourhood of the previous adenitis having taken on inflammatory action, the patient came again under observation. On examining the chest the heart sounds were *all quite clear*, and there were no signs of hypertrophy.

Remarks.—I think there can be no doubt that this patient went through a mild attack of scarlet fever without any one being aware of it, and that the renal and glandular affections are thus to be accounted for. The possible occurrence of rapid dilatation of the heart in the course of an acute febrile attack is well recognised, and would doubtless be more frequently found if it were searched for in all such illnesses. The diminution of the

regurgitation through the mitral valve as the dilated heart gradually returned to its normal dimensions, and the disappearance of the morbid sounds altogether when health was thoroughly re-established, point to a temporary change in the cardiac muscles, leading to imperfect occlusion of the auriculo-ventricular orifice by the mitral valve, as the probable cause of the murmurs.

Mitral Disease; Nauheim Treatment.—*Case* 15. E. F—, aged eleven years, was admitted into the hospital on April 23rd, 1897. He complained of great weakness, præcordial pain, and dyspnœa on exertion; he was very thin, and had an anxious expression.

History.—Rheumatic fever at eight years, when he was confined to his bed for a month; a second attack at twelve years, when he was confined to his bed for three months. The present symptoms dated from the second illness.

Examination.—Some visible carotid pulsation; external jugular vein rather full, cardiac impulse forcible and diffused, maximum point (apex-beat) fifth space, $2\frac{1}{2}$ cm. outside nipple line.

Cardiac dulness, upper limit second rib, left limit 17 cm. to the left, and right limit 3 cm. to the right of the mid-sternal line. A thrill to be felt over some distance round the apical area; a long presystolic murmur at the apex, and internal to it, and a systolic murmur also at the apex, conducted to the left scapular angle, and heard nearly all over back. Aortic sound faint but clear,

pulmonic sound accentuated. Liver not much enlarged. Lungs—a few scattered râles, resonance impaired on the right side posteriorly. Urine—specific gravity 1025, a trace of albumen.

Diagnosis.—Mitral stenosis and regurgitation, with commencing failure. Prognosis not good.

Treatment.—As there were but little secondary changes in the liver and lungs, the case was considered a fair one on which to try the effect of the Nauheim baths, and they were commenced after the patient had had a fortnight's rest in the hospital. Observations were made of the pulse, position of the apex-beat, and area of cardiac dulness before and after each bath. The treatment lasted from May 7th to June 1st. There was a temporary improvement in the pulse after each bath, the total area of the cardiac dulness diminished from 219·12 to 209·16 sq. cm., and the longest diameter was shortened by 1 cm. These measurements are given in full recognition of the fallacies inseparable from all attempts to define accurately the size of the heart by percussion. Such measurements can only be approximately correct. It should be mentioned that general tonic treatment was carried on concurrently with the baths, in order that the patient should receive every possible benefit. The small improvement did not last long, and the condition of the patient on leaving the hospital differed but little from that of similar cases in which no special baths had been used.

**Double Mitral Disease ; Cardiac Dilatation ;
Nauheim Treatment.**—*Case 16.* A. R. S—, a boy
aged thirteen, came under my care at the hospital
on February 10th, 1897. He complained of pal-
pitation and dyspnœa.

History.—Supposed to have had scarlet fever
when five years old, and typhoid fever in Tottenham
Hospital at ten years. The father said that he
had been told that the boy had had empyema
during the latter illness, but no operation had
been performed.

Examination.—Very pale and thin; carotid
pulsation a little in excess of the normal; cardiac
impulse forcible, action visible over the whole præ-
cordial area and on left side of epigastrium; apex-
beat diffused, but apparently in the sixth space
and to the left of the nipple line. Cardiac
dulness, upper limit second rib, left limit half an
inch outside nipple line, right limit one and a
quarter inches right of mid-sternal line. A pre-
systolic murmur, faint and rough in character,
heard best just internal to the nipple line in the
fifth space; a loud blowing systolic murmur in
the apical region, conducted to the left scapular
angle; a systolic thrill at the apex. Liver en-
larged to two inches below the costal arch.

Diagnosis.—Double mitral disease, with marked
dilatation.

Treatment.—Under the usual measures this
patient did not improve, but rather went back.
On May 18th the baths were commenced and

continued up to June 1st. Tracings of the areas of cardiac dulness were taken all through, and they showed a decided and progressive diminution of dulness to the left of the mid-sternal line, but on the right of the same line no such reduction was noted.

Remarks.—These two cases are given together as having much in common, but differing so far as the percussion evidence goes in the result of bath treatment. The limiting of the recession of cardiac dulness to the left side of the middle line of the chest in the latter case suggests an increase of lung expansion as the most probable explanation of the decrease in dulness.

Aortic and Mitral Disease; Late Appearance of Symptoms.—*Case 17.* L. G—, aged nine years, was admitted into the hospital on October 17th, 1898. Her symptoms were palpitation and dyspnœa, the latter being provoked by slight exertion; there was also much œdema of the legs.

History.—Two and a half years previously her mother had noticed that she had a little swelling of the joints, and especially of the ankles, and that at the same time the breath was becoming short. The child at first improved, and it was not until she became much worse that medical advice was sought. One brother had died of heart disease.

Examination.—The child pale but fairly nourished. A few moist sounds at the bases of the

lungs. Carotid pulsation slightly visible, pulse 90, regular and forcible; cardiac dulness—upper limit fourth rib, upper border, four and a half inches to the left, and half an inch to the right of the mid-sternal line; apex-beat fifth space, half an inch left of nipple line. Murmurs—double aortic and mitral systolic; liver but little enlarged. Urine—specific gravity 1030, no albumen, but an abundance of phosphates.

Diagnosis.—Aortic and mitral regurgitation with some aortic obstruction, compensation good but probably beginning to fail.

Treatment.—Absolute rest in bed, light food, and a mixture of cascarella with squill and miv of tr. digitalis thrice daily. The condition of the patient rapidly improved, but as the digestion was faulty she was put on a soda mixture; in a few days full diet was allowed. In two weeks, with the exception of a little shortness of breath on exertion, there were practically no symptoms; the apex-beat was only just outside the nipple line, and the body weight improved from 3 st. 12 lbs. to 4 st. 5 lbs., being a gain of $9\frac{1}{2}$ lbs.

Remarks.—The *vis medicatrix naturæ* was alone to be thanked for the comparatively satisfactory condition of this patient shortly before her admission to the hospital. The pain in the joints and difficulty in breathing two and a half years before did not appear to have attracted much attention, though they were doubtless due to sub-acute rheumatism. Improper or insufficient food

caused the general nutrition to fail, and, as a consequence, the heart was not equal to the abnormal amount of work it was called upon to do. To rest, to the rectification of the faulty digestion, and to judicious feeding must for the most part be attributed the rapid improvement in this case. In aortic regurgitant cases the state of the nutrition is of valuable prognostic value. If the systemic circulation be seriously interfered with (as it must be in marked aortic incompetence) the general nutrition, and with it the heart itself, is bound to suffer; hence progressive wasting is so commonly seen in this disease. In the case now under review the nutrition had suffered, not so much from inability in the heart to carry on the circulation, as from faulty feeding. When the digestive organs were put in order and proper food supplied, the nutrition improved, and the commencing downward progress of the heart affection was arrested, as shown by the recession of the apex-beat, along with a diminution of cardiac symptoms and a marked increase in body weight.

Aortic and Mitral Disease; Dry Pleurisy during an Attack of Influenza.—*Case 18.* F. H—, a girl aged fifteen years, was admitted into the hospital on November 19th, 1898. She complained of præcordial pain, dyspnœa, giddiness, and cough.

History.—Rheumatic fever at eleven years (three months ill), a second attack two years

afterwards (one month ill). The present symptoms had appeared after a severe cold eleven months before. Both parents had died of some lung disease.

Examination.—The patient was thin; the heart's action was visible over a large area, apex-beat fifth space just outside nipple line. Cardiac dullness—upper limit third rib, left limit four inches and right limit half an inch to the left of the mid-sternal line. There was a thrill at the apex, and a pre-systolic and systolic murmur, the latter being conducted to the axilla. The liver was not much enlarged. There was no marked carotid pulsation. Pulse regular and forcible. There was impaired breathing at the base of the left lung. Sphygmographic tracing indicated aortic regurgitation, but no murmur characteristic of that lesion could be made out at the first examination. After a few days, when the heart had settled down, a diastolic bruit was heard at the lower part of the sternum.

Treatment.—This consisted of rest, with digitalis and general tonics. During the month this patient was in the hospital she had two attacks of dry pleurisy, which were probably due to influenza, which was rife at that time.

Remarks.—This case illustrates some of the difficulties in diagnosis which are at times present. In this instance the thrill and the presystolic and systolic murmurs pointed to a double mitral lesion. Subsequently a diastolic murmur was heard, with

its point of maximum intensity a little to the right of the apex. In a doubtful case it may be a question whether the diastolic bruit is mitral or aortic in its origin, and, if the latter, whether the pre-systolic murmur depends upon actual or only virtual obstruction of the mitral valve. It is quite certain that all three murmurs have at times been heard, and yet a post-mortem examination has given no evidence of mitral stenosis. When the heart is contracting feebly and rapidly, only a small quantity of blood is sent to the aorta at each systole, and when the valve is at the same time incompetent, a comparatively small amount returns to the ventricle and little or no diastolic bruit is audible. But if the left ventricle become stronger, then with fewer and more efficient contractions a larger quantity of blood is injected into the aorta, and more returns during diastole, though the latter amount is increased less in proportion than the former. Under these circumstances a murmur, which was a doubtful one while the heart remained weak, may become pronounced as the case improves. "Virtual" mitral obstruction is probably due to a temporary impediment to the free flow of blood from the left auricle. Various theories have been propounded to explain this murmur when associated with aortic regurgitation. Dr. Sansom, after quoting the late Dr. Flint's explanation that this murmur is due to the apposition of the mitral curtains by their being floated up by the return through the incompetent aortic

valve, the subsequent flow of blood from the auricle causing the "blubbering murmur," proceeds: "If it be objected that if this were a true explanation of the presystolic murmur the latter ought to be frequently present in aortic regurgitation, the answer is that it is quite probable it is met with in those rare cases where retraction affects the posterior semilune of the aortic valve, with the result that the full force of the regurgitant current falls upon the great anterior segment of the mitral valve, abnormally forcing it towards the centre of the ventricle, and thus presenting to the current which flows from the auricle an improvised obstacle. Thus there is a virtual mitral stenosis, not permanent, but only when the ventricle is in the later stage of diastole. I cannot imagine that the mitral curtains being brought into coaptation, and the orifice being thus completely closed, any force proceeding from the auricle could separate them or cause the blubbering sounds. In such case two explanations would be possible: (a) the lifting force of the current, impinging upon the under surface of the great anterior mitral curtain, might so obstruct the current from the auricle as to create a *de facto* impediment at the end of each diastole, or (b) the vibrations might be directly communicated by the regurgitant stream from the aorta to the great mitral curtain. Nearness of the posterior segment of the aortic valve—diseased, perhaps, so that the morbidly produced orifice in diastole presents

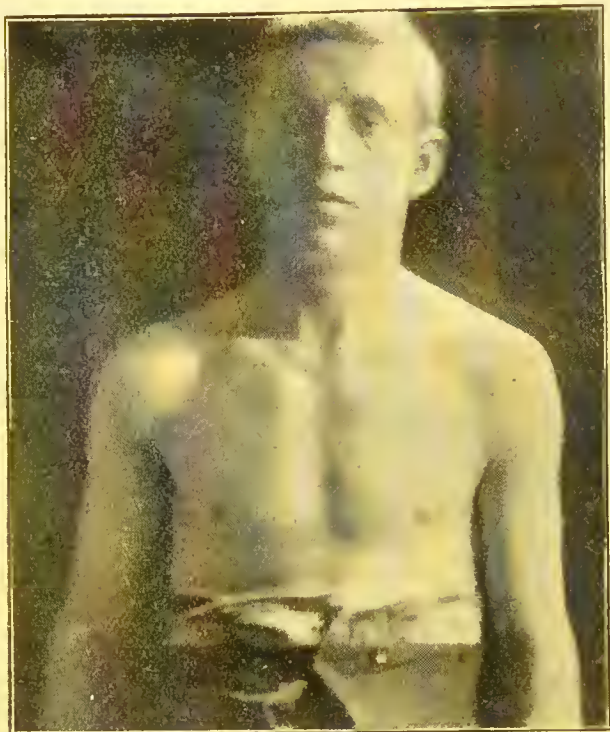
ragged or fringed borders—to this mitral flap may well account for such vibrations.”

I have gone somewhat fully into this question because I have frequently seen a diagnosis of mitral stenosis made in aortic cases without sufficient warrant. An extensive stenosis of the mitral valve must necessarily curtail the amount of blood flowing through it; if, therefore, in a case of moderate aortic incompetency the arteries are well distended, it is fair to presume that the presystolic bruit, if present, is due to a virtual, rather than an actual stenosis.

Aortic and Mitral Regurgitation; Heart Failure; Marked Improvement under Treatment.—*Case 19.* L. E—, a lad aged sixteen, consulted me on October 6th, 1898. He complained of great pain on the right side of his chest, and in the left loin; he had palpitation and difficulty of breathing on very slight exertion (he had to be supported coming into the consulting room); and he had a troublesome cough.

History.—Had been strong and hearty up to four years previously, when he had successively diphtheria, scarlet fever, and rheumatism. He apparently had recovered his health completely, and had remained well and able to join in school sports like other boys. Two years before, on ascending a long flight of stairs, he had lost his breath and had had bleeding from the nose. He had not taken much notice of this, but as he did not feel so well as before, he had taken a trip to

the Cape and back. Ten weeks before he had had pains in his feet and some other joints, which had kept him in bed for six weeks; from this illness he had not recovered. Family history very



Showing improvement by treatment.

good. Height 5 ft. 10 in., weight 8 st. 9 lbs. The patient had been "spoiled." He was very obstinate.

Examination.—Patient was thin, pale, breathless, and feeble. The heart's action was violent,

the apex-beat was apparently in the fifth space, and in the nipple line. The cardiac dulness extended from half an inch to the right of the mid-sternal line nearly to the left axillary border. There were double aortic and mitral systolic bruits, the latter being audible in the axilla, the second aortic sound could not be distinguished from the murmur. Liver but little enlarged. Crepitation at both pulmonary bases. Appetite bad. Pulse 132, tension low. No albumen in urine.

Diagnosis.—Aortic regurgitation and obstruction, and mitral regurgitation, heart failure. Prognosis—guarded.

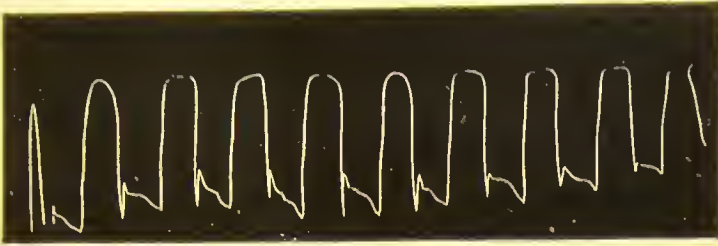
Treatment.—Absolute rest for a time, careful dieting, no stimulant unless urgently called for. The medicine was generally of a tonic nature, and had to be varied from time to time.

October 13th.—Patient was improving, lungs clearing.

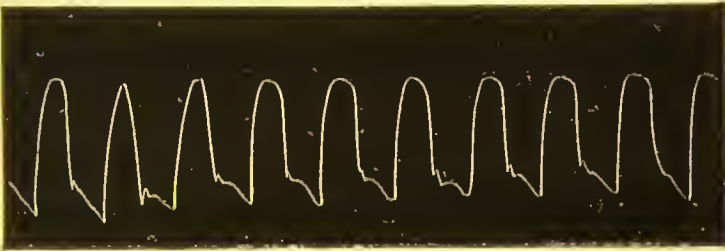
November 21st.—Still improving, cardiac dulness to the left diminished, heart's apex more definite and a little lower down, the second aortic sound was now distinct from the murmur, weight 8 st. 13½ lbs.

December 12th.—Was sleeping ten to twelve hours at night, could lie in any position, weight 9 st. 2 lbs. 10 oz.—a gain of 3 lbs. 2 oz. Appetite good. Pulse 84.

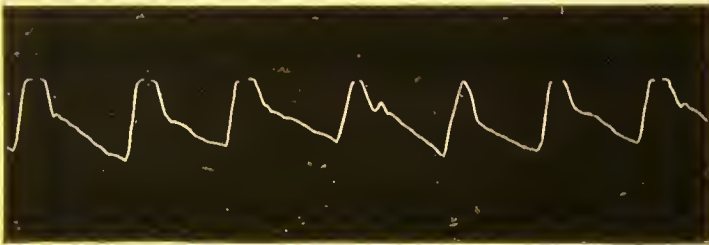
April 26th.—Was looking well, the aortic murmurs remained, but the mitral systolic was less



January 4th, 1899. 4 oz.



February 1st, 1899. 3 oz.



April 26th, 1899. 3 oz.

The following diagram, showing areas of cardiac dulness and the positions of the apex-beat, together with the above sphygmograms, indicates the improvement in the physical condition of the heart.

pronounced and was not heard so far to the left, cardiac dulness was sensibly diminished, especially to the left. Weight 10 st. 6 lb., being a gain of 25 lb. in the seven and a half months.

Remarks.—As has already been observed, the boy was naturally self-willed, and the parents exercised no sort of control over him, yet in spite of this we find that for two years his heart disease caused him no inconvenience. A long toil upstairs caused but temporary discomfort, and it was not until he had a second rheumatic attack that he broke down.

The recovery of this patient to comparative health from the pitiable condition he presented when he first came under observation, calls for comment.

(1) Children with moderate aortic insufficiency and a competent mitral valve should, if some time has elapsed since the last acute illness and there are no signs of heart failure, be allowed as much exercise in the open air as, in the discretion of the medical attendant, is advisable.

(2) The heart is in its most active period of development about the time of puberty. Unless, therefore, the damage to the valve is very severe a patient in early youth has a good chance of obtaining a salutary hypertrophy of his heart if the case is judiciously managed.

(3) Remember also the necessity for prolonged rest after an acute illness, especially rheumatism, since it is during convalescence, when the imme-

diate causes for anxiety have passed away, that dilatation is prone to occur.

(4) The importance of not founding a prognosis solely on the evidence afforded by the physical examination of the heart. In this case the state of the lad was bad enough, and it was primarily due to his heart affection, but he was depressed at having been told he had only a week to live. What were the elements in his favour? (*a*) Healthy parentage, (*b*) his time of life, (*c*) fairly healthy digestive organs, (*d*) healthy kidneys, (*e*) the moderate character of the aortic reflux and absence of œdema.

His one difficulty was his heart, which, it was fair to assume, would be equal to the demands upon it if in the meantime the tendency to dilatation could be arrested and hypertrophy established.

Adherent Pericardium ; Difficulties in Diagnosis.—*Case 20.* A. D—, a boy aged fourteen years, was admitted to the hospital on January 31st, 1899. He complained of dyspnoea, cough, and œdema of the feet.

History.—Influenza about four years previously, rheumatism last year. Six months before he had begun to have palpitation and shortness of breath, and a fortnight before the legs had begun to swell. His father had died of heart disease and dropsy in St. George's Hospital.

Examination.—Patient had a pale yellowish complexion, and was of morose temperament, so

that it was difficult to obtain much information from him. Nutrition fairly good. No visible carotid or venous pulsation. Pulse 108, full and regular. Apex-beat fifth space, nipple line. Cardiac impulse forcible. Cardiac dulness, upper limit third rib to the left $8\frac{1}{2}$ cm. to the right 4 cm. from the mid-sternal line. At the apex there was a thrill, systolic in time, and rough presystolic and a soft systolic murmur; at the third left intercostal space at the sternal margin a soft diastolic bruit was heard which was evidently aortic, though the second aortic sound was audible. Liver dulness extended from the fourth rib to 15 cm. below the costal margin. Lungs, a few moist sounds, otherwise healthy. Stomach dilated. Urine, specific gravity 1015, with a trace of albumen.

During the whole time the patient was in the hospital, until a few hours before his death on April 24th, he was never free from pyrexia, with occasional exacerbations, which were accounted for by patches of consolidation, especially in the right lung. The cardiac dulness steadily increased, but at no time was there any evidence of effusion into the pericardial sac. Another marked feature in the case was the more or less constant præcordial pain, which was with difficulty relieved by anodynes. It was impossible to localise the pain, as the boy's hand would wander over a large area when asked to indicate the painful part.

On April 24th the temperature suddenly fell to 97° and the patient rapidly sank.

A post-mortem was made by Dr. Gibbes in my presence on April 27th. The notes are as follows. Body blanched, feet œdematous. Thyroid gland enlarged. The right pleura, costal and visceral layers, was adherent from recent lymph over a space about the size of the palm of the hand on the surface of the lower lobe, between the nipple and the anterior axillary lines, the mediastinal layers of the pleura on both sides were adherent to the pericardium. The left pleura at the base was adherent to the diaphragm. The lungs were pale and there were no infarcts.

Pericardium.—There was one long narrow strip of adhesion between the parietal layer and the chest wall. The two layers of the pericardium were closely adherent throughout. Over the right auricle and the great vessels was a straw-coloured layer of jelly-like lymph half an inch thick, this also extended over the anterior surface of the left auricle, where it was only one sixth of an inch thick.

The heart, including the pericardium and roots of great vessels, weighed 30 ounces. The apex extended downwards to the upper border of the seventh rib in the anterior axillary line; both auricles and ventricles were dilated and hypertrophied. At the aortic orifice the semilunar valve was insufficient, but capable of some resistance; the margins were studded with small hard fibroid granulations. The mitral orifice was becoming funnel-shaped, the margins fibrosed and granular,

barely admitting two fingers; there were similar small hard granulations on the auricular surface of the cartilages. The liver weighed 60 ounces, the nutmeg character was very well marked, and the upper surface was adherent to the diaphragm from recent perihepatitis. Stomach much dilated. The spleen and kidneys had nothing noteworthy in their appearance.

Remarks.—This case illustrates the difficulties in diagnosis in cases of adherent pericardium, especially when in association with valvular disease. In this case there was only one small band connecting the adherent pericardium with the chest wall, consequently there were no signs of dragging during cardiac systole. The cardiac hypertrophy was great, but scarcely out of proportion to the extent of the valvular mischief. At one time infective endocarditis was suspected on account of the persistent pyrexia and the extreme anæmia, pleurisy, and a patch of pneumonia, but the spleen was never enlarged. It is manifestly impossible to say whether the endocardial inflammation preceded, followed, or was concurrent with the pericarditis. The case, viewed in the light of both its clinical history and the post-mortem evidence, appears to have been one of chronic or frequently recurring attacks of rheumatic carditis—the heart being already damaged by the previous illness. The pericarditis and pleurisy and the after effects of these inflammations would abundantly account for the pains in the chest which

were such a constant cause of distress to the patient.

Mitral Stenosis and Regurgitation; Thrombosis of Right Cephalic Vein.—*Case 21.* B. B—, aged fifteen years, was admitted into the hospital May 4th, 1896. She complained of pain at the heart and shortness of breath on exertion. These symptoms first appeared two months since.

History.—Chorea at thirteen years, which lasted six months.

Examination.—The heart was considerably enlarged, especially in the lateral direction. There was a well-marked thrill at the apex and loud presystolic and regurgitant murmurs at the apical region; the pulmonic second sound was accentuated to a moderate extent. Liver a little enlarged. Urine acid, specific gravity 1015; no albumen.

The patient steadily improved, and she was discharged on July 8th. On October 13th she was readmitted with all her previous symptoms greatly aggravated. Temperature 101.4°; legs swollen and breath very short. There was a history of a rigor six days before admission. The mitral systolic murmur was more blowing, and the presystolic was longer and more churning in character. There was imperfect resonance and deficient breathing at the bases of both lungs behind, while on the right side the dulness extended up to the inferior angle of the scapula. There was no actual bronchial breathing. There was ascites, and the liver was enlarged nearly to the level of the umbilicus.

October 19th.—The patient had been going on well, but that day she complained of an aching pain in the right shoulder. On the following morning there was considerable swelling of the arm from the wrist to the insertion of the deltoid, the veins were enlarged and the hand was dusky. The radial pulse was less on the affected side. By the following morning the swelling had extended to the supra-clavicular region. By December 8th the œdema of the arm had entirely gone, as also had the ascites and the œdema of the legs. The patient gradually improved up to January 28th, when the breathing again became more difficult. On February 11th the dyspnœa was urgent and the expectoration was blood-stained. Examination of the lungs showed a large patch of dulness at the right base, with coarse râles on both sides of the chest. On the following day pleuritic rubs were discovered on the left side. The urine was loaded with albumen.

February 21st.—Pleuritic rubs were heard on the left side, beneath the nipple.

On March 30th the urine was quite devoid of albumen and the lungs were clearing up, and at the expiration of five weeks the patient was sufficiently well to go home.

Remarks.—The foregoing brief abstract illustrates (1) severe heart disease after chorea; (2) attacks of pulmonary apoplexy, patches of pneumonia and pleurisy, probably due to infarcts in the lungs; (3) sudden and severe albuminuria

from renal infarct; (4) thrombosis of the cephalic vein; and (5) the possibility of a child being able to go through so many complications of valvular disease and to recover sufficiently to be able to walk about again.

Chronic Bronchial Catarrh of Cardiac Origin; Late Recognition of the Heart Affection.—*Case 22.* E. M. L—, aged ten years, consulted me in June, 1898. The patient complained of palpitation, dyspnœa on the slightest exertion, headache, and a hacking cough. During the attacks of coughing she would become cyanosed.

History.—She had always been liable to bronchitis whenever the weather became at all cold, and she was scarcely ever without a cough. She had not had scarlet fever, rheumatism, nor chorea; the only acute illness, other than the bronchial attacks, was influenza the year before, but this had not lasted long, neither had the mother noticed that the child was distinctly the worse for it.

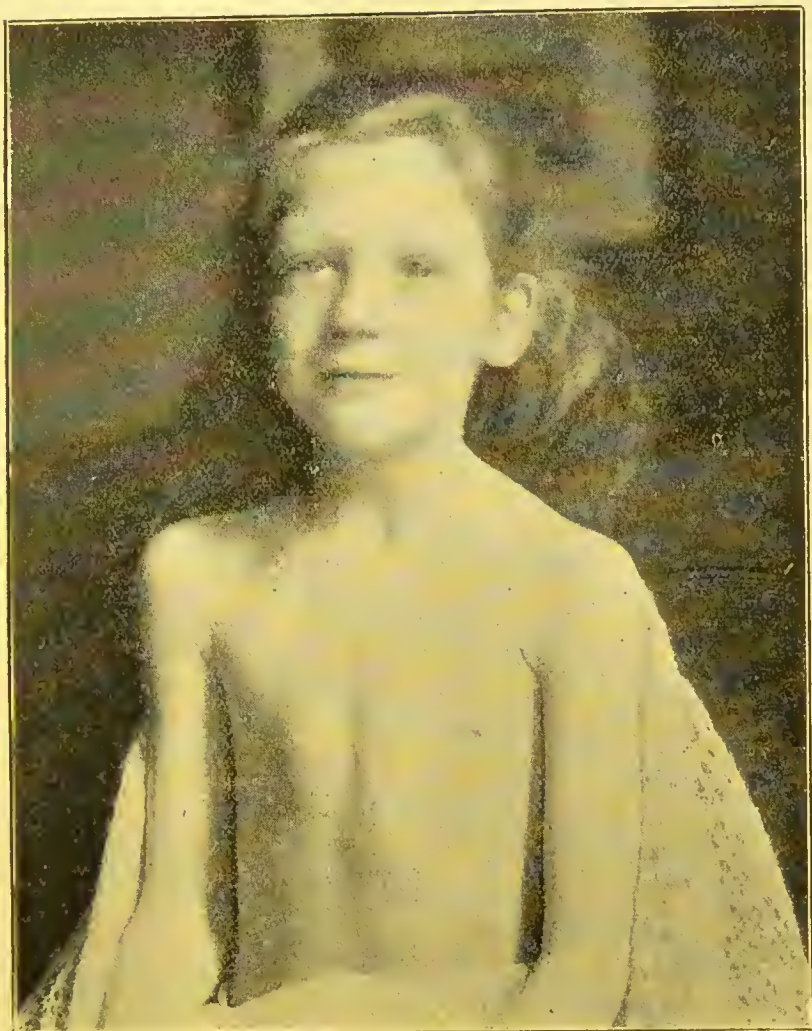
The patient was frequently under medical care for the bronchial attacks, but on none of these occasions was heart disease suspected. The previous winter the mother was directed to rub the patient's chest with liniment, and then she for the first time noticed a marked fulness of the left side of the chest. The heart was examined by the doctor on his next visit, and he discovered extensive valvular disease.

Examination.—The child was very thin, although the face was fairly full (see photo). There was a marked difference between the two sides of the chest; the right was depressed as though the child had had rickets, while there was projection forwards of the anterior chest wall, the fulness extending to the left axilla and downwards to the left side of the epigastrium. The apex-beat occupied a large area; the impulse of the right ventricle in the epigastrium was more marked than that of the apex. There was a loud systolic murmur, which was most intense in the apical region; the second pulmonic sound was moderately accented. There were subcrepitant râles at the bases of both lungs. The liver was considerably enlarged, and the ankles were swollen. The child had an anxious and distressed expression.

Diagnosis.—Mitral incompetency (probably long standing) with cardiac failure, as indicated by the extensive cardiac dulness, especially in both lateral directions, and the ill-defined and feeble apex-beat.

The patient was sent back to her home in the country, to be under her doctor there. I was informed she died three weeks after I had seen her. No post-mortem was obtained.

Remarks.—This case illustrates—(1) The danger of relying on a partial examination for the purpose of diagnosis. The patient had a more or less constant cough, and at time actual bronchitis, both of which symptoms were consistent with the physi-



Showing how the enormously enlarged heart caused bulging
of the left chest.

cal signs in the lungs. But the very rebelliousness of the case to treatment should have suggested the probability of some extra-pulmonic cause for symptoms.

(2) As regards the apex-beat in this case. The most forcible impulse was certainly that due to the right ventricle, whereas the impulse of the contracting left ventricle was feeble and indefinite. A mistake is sometimes made in attempting to localise the apex-beat from want of recognition of this source of fallacy.

(3) As to the probable cause of the heart lesion in the absence of any history of rheumatism, chorea, or scarlet fever? There is, of course, the possibility that the disease was congenital in the first instance, but it was more probably acquired during an unrecognised rheumatic attack. A case already related shows that the only sign of rheumatism present may be a few nodules on the extremities. In this case, as the parents were simple country folk, it is likely that the child had subacute rheumatism at some time, which was put down as "growing pains."

Abnormal Smallness of Heart due to Early Mitral Stenosis.—*Case 23.* J. H. W—, aged twelve years, living in the Isle of Wight, consulted me in July, 1895. Patient was a small undersized boy of a clear complexion; he complained of difficulty of breathing and blueness of skin after running; he could, however, ride on a pony for a long distance. The mother stated there was occa-

sional cyanosis during crying from a short time after the child's birth. The boy did not get specially blue until when, at nine years of age, he competed at a running race at school, and again, in the following year, after running home from school. The mother was alarmed this time very much.

History.—No serious illness. When three years of age he commenced stuttering; later on choreic symptoms appeared, which persisted in varying degrees until a year ago. He had had occasional rheumatic pains in the left knee up till quite recently.

Family history good, though a son by the father's former wife had died at the age of fourteen of congenital heart disease.

The patient is thin and undersized, complexion good.

Examination.—The heart's impulse was visible and strong, the action becoming even laboured on laying the patient down (as the child was nervous these symptoms must be discounted). The area of cardiac dulness was not increased; the apex-beat was under the fifth rib and half an inch to the right of the nipple line. The sounds were normal until after the patient had suddenly risen from the recumbent posture, when a short but distinct presystolic murmur was audible, and the pulmonic second sound became reduplicated. On examination after the patient had gone upstairs and down again, the sounds were normal.

On September 30th, 1899 (after an interval of four years), the patient was seen again. Although he had grown, he was yet small for his age. As long as he avoided extreme exertion he had no symptoms. The cardiac dulness was less than normal, impulse feeble, sounds clear, and the second pulmonic was a little accentuated. Liver was not enlarged.

Remarks.—This case presented many difficulties as to diagnosis. That the circulation was embarrassed under exertion there could be no doubt, but it was equally evident that if the strain were not excessive, both the subjective symptoms and the murmur disappeared after a short rest. Then as to the character and site of the lesion? The evidence pointed to a small obstruction at the mitral valve, or its distal side, which only sudden or great exertion made evident. The murmur—when present—was distinctly that of mitral stenosis. Moreover, there was no displacement of the apex-beat, or any sign of dilatation or hypertrophy of the left ventricle. Further, the absence of liver enlargement and dilatation of the right ventricle bore witness to the comparatively insignificant extent (at that time) of impediment to the circulation through the lungs.

Examination after an interval of four years favoured the original diagnosis, although the subjective symptoms were not much in evidence. The heart was abnormally small, there was some accentuation of the pulmonic second sound, and a

stunted growth and generally retarded development: all pointing to the existence of a check on the arterial circulation,—probably at the mitral valve. The mitigation of, rather than an increase in, the signs of obstruction showed that no contraction of the mitral orifice had taken place during the interval of four years.

The two chief causes of abnormal smallness of the heart are (1) extensive pericardial adhesion (especially when there is adhesion to the chest wall), and (2) pure mitral stenosis. Pericardial adhesion may, by interfering with freedom of action, hinder cardiac development, which, although it may cause little if any present inconvenience, would, in the event of the supervention of valvular disease, cause trouble through the hindrance to salutary hypertrophy of the left ventricle. A similar difficulty might occur in the event of the patient becoming the subject of arterio-capillary fibrosis, a condition necessitating hypertrophy of the left ventricle. Bronchitis, or any disease which would create difficulty with the circulation through the lungs, would be a more serious illness to a patient who had adherent pericardium, inasmuch that the right auricle and ventricle being bound down, the hypertrophy which would enable the right heart to meet the demands thus thrown upon it cannot take place.

(2) Mitral stenosis as a source of imperfect development of the heart. That the myocardium, in common with other muscles, should develop in

proportion to the demands made upon it is a matter of every-day experience. The converse is equally true: if the volume of blood reaching the left ventricle is less than it should be, then the quantity which can be sent through the aortic orifice is necessarily abnormally small; hence, the usual stimulus to the left ventricle being deficient, growth is retarded. It is also probable that the nutrition of the heart itself would suffer.

As regards treatment, the patient was directed to take exercise in moderation, to cycle only on the level and for a limited time. As for medicine, small doses of digitalis, with iron, were ordered to be taken over a lengthened period.

Congenital Heart Disease; the Importance of treating by Symptoms.—*Case 24.* L. B—, a boy aged two years, was brought to me on April 17th, 1894. The mother stated that the child was very feeble and irritable, that whenever he cried or was in any way put out he became very blue in the lips and under the eyes. This state of things had existed since birth, but the symptoms had become much aggravated of late. The patient was said to have had ulceration of the stomach four months since. The mother was suffering from phthisis; both grandparents were strong and well.

On examination the child was found to be feeble and ill-nourished; the tongue was furred and the bowels irregular, with offensive motions. The urine was said to be thick. Some cyanosis was

present when the child was quiet, and it became intense when the patient was agitated. The cardiac dulness was enlarged, especially to the right, and a systolic murmur was heard over a large area of the chest on the left side; the second sound was re-duplicated at the pulmonic area.

Remarks.—This case was clearly one of congenital heart disease, but not of a very severe character. The cardiac affection did not under ordinary circumstances give much trouble; in fact, the feebleness and fretfulness were for the most part due to indigestion, arising from improper feeding. That this was so is clear from the prompt removal of the more urgent symptoms when the child had been put on a diet suited to her age and condition, and medicines calculated to rectify the disordered digestion had been prescribed.

It is often urged that it is unscientific to treat symptoms; but, with a thorough knowledge of the conditions underlying the symptoms, much benefit may accrue to the patient by the use of appropriate remedies for their relief. A rule-of-thumb treatment of symptoms is certainly unscientific, and it may be fraught with much danger to the patient. This is, however, quite a different thing from the judicious application of drugs, whereby much suffering may oftentimes be prevented or removed.

Double Aortic Disease and Mitral Regurgitation; Anginal Symptoms.—*Case 25.* F. C—, a boy aged nine years, was admitted

December 8th, 1896. The chief symptoms were palpitation and dyspnœa on exertion. The boy was pale, and he had an anxious and distressed expression.

History.—Rheumatic fever at five years, during the course of which he had measles. A second rheumatic fever at seven years, and a third one three months later, when pneumonia was a complication.

Family history.—The father was healthy, but the mother had had rheumatic fever.

Examination.—The heart's action was visible over a large area and was heaving in character. The cardiac dulness was greatly increased; it extended from the right border of the mid-sternal line across to the left mid-axilla, while the apex-beat was in the sixth space one inch inside the nipple line; it had a fairly good "push." The right lung had impaired breathing at the base (probably the remains of his pneumonia), and the breathing at this part was harsh and wavy. There was a murmur with both aortic sounds; the diastolic was heard loudest from the second right intercostal space to the sternal margin of the fourth costal cartilage; the second aortic sound could be distinctly heard. At the apex was a systolic murmur, which was conducted to the left scapular angle. There was visible pulsation of the carotids. The liver was but slightly enlarged.

Diagnosis.—Aortic and mitral regurgitation with some obstruction at the former orifice; hyper-

trophy and dilatation, especially of the left ventricle ; commencing cardiac failure.

Under nursing and treatment the heart regained its capacity for carrying on the circulation under ordinary exertion, and he was discharged on March 18th. The patient was seen at intervals, and he



The above illustration shows the fulness in the præcordial region and great wasting of the muscles of the arms and neck (a condition usually present in aortic regurgitant disease). This wasting is in marked contrast with the plumpness of the face.

held his ground until September, 1899, when it was found that the heart had further dilated. For the first time the patient now complained of sharp pains radiating across his chest, which were at times succeeded by numbness down the left arm. The child's mother described the attacks as most

alarming. As the tongue was furred, and there were other grounds for suspecting that the patient had been improperly fed, a calomel purge was prescribed and the digestive organs generally attended to. These measures were partially successful, but the anginal attacks soon increased in frequency and severity. In addition to the medicine he had been taking for the heart, he was directed to take one quarter of a drop of liq. trinitrini directly the pain threatened. Immediate relief was obtained by this measure. The patient was able to get about, and at the last observation (November 6th), although over two months had elapsed since the liq. trinitrini was commenced, the dose had not had to be increased.

Remarks.—The anginal symptoms, as is so often the case, were caused by cardiac failure. The heart had been able to combat with its difficulties until a strain on the already weakened left ventricle caused the latter to yield to the intrinsic blood pressure and still further dilate. The pain was probably due to the great distension of the left ventricle, and the relief afforded by the nitroglycerine was owing to the reduction of the blood-pressure in the vessels.

Heart Strain.—*Case 26.* A. H—, aged fourteen, tall for his age and slim, consulted me on April 25th, 1896. He complained of sudden attacks of pain at the region of the heart and shortness of breath during exertion. There was no history of any serious illness; both the personal

and family history were good. He had been a great runner and had won several prizes.

On examination the heart's action was seen to be visible over a large area, impulse fairly strong, cardiac dulness increased both to the right and to the left, apex-beat not accurately defined, but appearing to be as high as the fourth space. The only abnormal cardiac sound was a prolongation of the first sound at the apex. Liver not enlarged. The spine had a little lateral curvature.

Diagnosis.—Irritable, and probably dilated, heart.

Treatment.—To give up running and confine himself to moderate exercise, to rest on his back for half an hour twice daily, the curvature to be treated by appropriate exercises and massage, liberal diet and tonic medicines.

The patient improved in a few weeks, but running and sea-bathing always caused blueness of the lips. After a year's interval the patient again presented himself, when his condition was in all respects much improved.

Remarks.—The patient was by no means a strong boy, yet his pluck made him overtax his powers of endurance. It is possible there was some slight congenital defect in the heart which the strain of running brought out. The high position of the apex-beat was probably due to right side dilatation. The practical point is that no boy who has shortness of breath or palpitation after moderate exertion should be allowed to com-

pete in sports until his chest has been thoroughly examined and a favourable report given.

Anæmia with Dilated Heart.—*Case 27.* M. B—, aged nineteen, in domestic service, residing at Wandsworth, came as out-patient on April 28th, 1898. She complained of pain over the præcordium, which often shot down the left arm, shortness of breath, palpitation, and indigestion. Bowels regular. Catamenia regular, but scanty and nearly colourless.

As the patient was getting steadily worse as an out-patient, she was admitted on May 19th. She was in a fairly good state of nutrition, but strengthless; the cardiac dulness was increased, especially to the left, where it extended to nearly three inches beyond the parasternal line. The pendulous and flabby state of the mammæ made determination of the cardiac dulness more than usually unreliable, but there was clearly no marked increase in the vertical dulness; the apex-beat was in the fourth space, half an inch internal to the nipple line. There was a soft systolic murmur at the apex and conducted to the anterior axillary line. The liver dulness extended downwards for three and a half inches from the fourth right intercostal space. Urine—specific gravity 1030, acid, and devoid of both albumen and sugar. Blood—45 per cent. hæmoglobin.

The patient was placed in a very light part of the ward, kept in bed, put on a liberal diet, and ordered an iron and strychnine mixture, with small

doses of tincture of digitalis. In spite of careful dieting and attention to the bowels, headache was a constant trouble, so that the iron could not be pushed.

By June 11th the hæmoglobin had increased to 47 per cent., and the patient was allowed to sit out of doors, but she was to return to the ward by the lift. The cardiac dulness was diminished.

June 25th.—Steadily improving; hæmoglobin 56 per cent.

June 28th.—The murmur was much more localised, and the general appearance of the patient was much improved. She was sent to the country, with directions to continue the medicine and to report herself on her return, but I have heard no more of her.

Remarks.—This was a case of long-standing anæmia, with dilatation of the heart. The patient, while endeavouring to go on with her work, not only failed to improve with treatment, but got progressively worse. The breathing became more laboured, and the cardiac symptoms generally increased in severity. It was evident that rest was essential to success in treatment. When the patient left the hospital she could get about with but little inconvenience. There was reason to hope that the heart would in time completely recover, if only the directions given were carried out. Whenever the heart shows signs of yielding in anæmic cases, rest—more or less complete—should be enjoined.

There are three additional points of interest in this case that call for a few remarks. (1) The high position of the apex-beat. This is frequently seen in chlorotic cases, and it is generally considered to be due to dilatation of the right ventricle. (2) The systolic mitral murmur, which nearly disappeared under treatment, was due to dilatation of the left ventricle and consequent loss of perfect coaptation of the mitral curtains. (3) The absence of a murmur in the region of the pulmonic valve. Dr. Foxwell, in the Bradshaw Lecture for 1899, showed that the systolic murmur, frequently heard at the second left intercostal space near its sternal margin, is not due to the alteration in the blood itself, but to eddies in the blood-stream in consequence of dilatation of the conus of the pulmonary artery.

The absence of a murmur at the pulmonic region, coupled with the small increase of vertical dulness, would indicate that the dilatation of the conus and artery (if present) was not extensive.

Heart Disease after Scarlet Fever.—*Case* 28. Leonard G—, aged seven years, came under my observation on November 27th, 1895. He complained of pains in the limbs, palpitation, and headache; he had lost flesh, especially during the last six months, and he had lately become very pale.

History.—Scarlet fever at two years; the course of the fever was uneventful and there were no sequelæ. Pains in the limbs the last six months.

Examination.—The child was pale and had an anxious expression ; weight 3 st. $3\frac{1}{2}$ lbs. The tonsils were enlarged. The heart was considerably enlarged to the left, and there was a systolic murmur at the apex, which could be heard also all over the back. After exertion, such as a few resisted movements, the murmur became musical. The patient improved under careful dieting, with digitalis and iron as a tonic, but he lost ground through recurrent attacks of tonsillitis.

Remarks.—The liability to rheumatism which follows scarlet fever must never be lost sight of, and “growing pains” in children who have had this fever should always suggest the probability of their being rheumatic. It may be mentioned in passing that early joint disease, especially of the hip, where the pain may be wholly referred to the knee, has not infrequently been put down to “growing pains,” with disastrous consequences. The repeated attacks of tonsillitis were doubtless rheumatic.

Double Aortic Disease with Competent Mitral Valve.—*Case 29.* S. N—, a girl aged twelve years, came under my care as an out-patient on October 10th, 1899. She complained of stabbing pains going through the heart—palpitation, dyspnoea on exertion, orthopnoea, and faintness every morning.

History.—Rheumatic fever at three years of age—confined to her bed three months. Three attacks since, during each of which she was confined to

her bed for four months. She has never been free from rheumatic pains; nutrition very good; pulse regular, collapsing. Both parents are subject to rheumatic pains, but neither has had acute rheumatism.

On examination the heart's action was abnormally visible, but the "push" was not strong; cardiac dulness was increased downwards and a little outwards; the apex-beat was in the fifth space nipple line. There were aortic, systolic, and diastolic murmurs, the second sound being audible; the mitral valve was competent. The liver could not be felt below the costal margin.

Diagnosis.—Aortic obstruction and regurgitation, with no present marked dilatation of the left ventricle. The symptoms, however, being in advance of the physical signs, it was probable that the walls of the heart were beginning to yield. Prognosis unfavourable.

Treatment.—The patient was ordered complete rest for a week, and then to take gentle walking exercise in the open air if the weather was fine. Small doses of Liq. Trinitrini, with convallaria and nux vomica, were prescribed. By the following week a fresh rheumatic attack appeared to be imminent, and salicylate was prescribed. The child returned on November 23rd, when examination disclosed further dilatation of the left ventricle and a loss of the second aortic sound. Rest for a lengthened period was ordered, and small doses of digitalis with iron and strychnine given.

Remarks.—This case is of interest as illustrating a large part of a young life spent in suffering from rheumatism, and its effects upon the heart; also the ability of the heart to maintain its vigour through so many acute attacks, as shown by the moderate dilatation and the persistence of the aortic second sound for so long a time. The good state in which the general nutrition was kept up was an important element in the case. In spite of these favourable circumstances, the prognosis was bad for these reasons: (1) The rapidly recurring attacks of acute rheumatism and the constant presence of rheumatic pains; (2) the subjective signs of cardiac failure. That the prognosis was justifiable was evident later on, when, after another rheumatic attack, the aortic sound was no longer audible and heart distress was increased. It may be asked, Why was digitalis prescribed in a case of aortic regurgitation with a competent mitral valve? The reasons were that, from the great change for the worse in the state of the heart since the last illness, it was probable that the myocardium would soon still further yield, and with the patient at rest it was considered that the drug might be used with advantage, and thus possibly prevent an early break-down.

Since the above was written the patient has been again seen. She was free from all pain, morning faintness, and other subjective signs, and her mother stated she was better and stronger than she had been for four years. On examination the

cardiac dulness was, if anything, diminished, the action of the heart more vigorous. There was a systolic murmur at the apex when the child was excited. The liver was felt just below the costal margin. The aortic murmurs were unaltered.

Mitral Disease, Severe Cardiac Failure, General Dropsy; marked Improvement.—

Case 30. Alice H—, aged eighteen years, a domestic servant, came under my care at the hospital on April 1st, 1897. She complained of severe dyspnœa and swelling of her legs and abdomen.

History.—Health good up to twelve years, when she had scarlet fever complicated by pneumonia. Her recovery was apparently perfect. Two years afterwards her breath became short on exertion, and she was occasionally giddy. Six months ago the legs began to swell, but she struggled on with her work to within a month of her admission to the hospital.

On admission the patient presented a pitiable condition—she was exceedingly feeble, face cyanotic, pulse thready, temp. $96\cdot4^{\circ}$; the legs were hard and swollen, presenting the appearance of elephantiasis, and there was some ascites.

Examination.—The heart dulness was considerably enlarged; its upper border was at the second rib, left limit $6\frac{1}{2}$ inches from the mid-sternal line, the right limit over an inch from the mid-sternal line. The apex-beat was in the fifth space $6\frac{1}{2}$ inches to the left of the mid-sternal line. There was a rough and blowing systolic murmur at the

apex conducted to the left axilla, both the aortic sounds were feeble, and the second pulmonic sound was but little accentuated. The first sound at the apex was not discoverable. The liver was enlarged nearly to the level of the umbilicus. Lungs: There was dulness with deficient breath sounds at the right base posteriorly, and mucous râles in the upper lobes; the breathing on the left side was puerile. The abdomen was much distended, and there was some ascites. The urine was acid, and contained one quarter of albumen.

Diagnosis. — Mitral regurgitation and heart failure.

Prognosis.—Bad.

Treatment.—absolute rest in bed; but if the breathing became more embarrassed and the patient wished to sit in the chair, she was to be allowed to do so. A blister was to be applied to the lower part of the right side of the chest, where there was acute pain; alcohol was to be avoided if possible, and a pill containing calomel, digitalis, and squill, of each one grain, was ordered to be taken three times a day. Milk diet.

Under this treatment the patient speedily showed signs of improvement; the urine in five days increased from fourteen ounces to forty-seven ounces. On the 8th of April fifty-six ounces were passed, the cyanosis was less marked, the amount of albumen in the urine was reduced to a mere trace; the size of the legs was reduced, and they were much softer. The improvement was maintained,

and the patient left the hospital by her own desire on May 9th, feeling "very well."

The following final note was made :—The general condition has much improved ; there was no œdema, the urine had a sp. gr. of 1027, and contained a trace of albumen. A thrill was felt at the heart's apex, where a slight presystolic localised murmur was heard ; also a loud systolic murmur conducted to the left subscapular region. The second pulmonic sound was much accentuated. The lungs were clear. Liver much decreased (exact size not noted).

Remarks.—There could be no doubt as to the very serious condition of the patient on her admission, and the almost solid œdema of the legs testified to the length of time she had continued to work after she should have given up. Moreover, the albuminuria showed great renal venous congestion from backward pressure. As regards the condition of the heart itself, there was little obstruction at the mitral valve, but much regurgitation, while the feebleness of the pulmonic second sound indicated (in the presence of marked mitral reflux) great weakness of the right ventricle. It will be remembered that when the patient improved the second pulmonic sound became much stronger. Further, the increased area of cardiac dulness with feebleness of the apex-beat were also indications of dilatation of the chambers of the heart.

The question of venesection was an important

one to decide, seeing that the relief to the right side of the heart this operation gives is so great. But with hospital patients the prejudice against bleeding is so great that one can rarely use it. Besides, the cyanosis would probably be less intense after the patient had rested in bed, and calomel with digitalis might then give the needed relief to the vascular system. The very satisfactory result of treatment shows that the nutrition of the heart muscle was fairly good and responsive to remedies. When the case is urgent, calomel is preferable to blue pill if a mercurial is indicated.

The occurrence of albuminuria (to the extent of one third) in this case calls for a few observations. Albumen in the urine in heart failure in young patients is generally due to a rise of blood-pressure in the glomeruli of the kidneys, caused by the venous stasis, and the albumen ceases to be present when the blood-pressure becomes normal. In the present instance we see the effect of calomel in reducing the abnormal pressure, and the subsequent disappearance of the albuminuria. Although albuminuria from pre-existing renal cirrhosis is rare in young patients, the possibility of its existence must be borne in mind. An inquiry into the previous history and an examination of the urine for casts will assist in clearing up a doubtful case.

No brandy or whisky was ordered, as it was felt that, if it could be avoided, the effect of the treatment would be more promptly seen. If, however,

signs of failing strength arose, stimulants were to be given.

Mitral Disease; the Question of Nauheim Treatment.—*Case 31.* E. M. S—, a young lady aged 17, came under my care on October 31st, 1899. She said she had had a feeling of cramp at her heart twice during the last three weeks, otherwise she felt well. She rarely had any palpitation or shortness of breath, and she was not conscious of any inconvenience in going upstairs.

Family history good. The mother was of a nervous and anxious temperament.

Patient had always been delicate; she had had chorea at three, eleven, and at fifteen years, and a questionable attack of scarlet fever at eleven years. At fifteen she went to Switzerland, and while there she had three attacks of chorea, also influenza. During the last illness the heart was discovered to be affected. During the summer she had been taking exercise rather freely.

Present condition and physical signs.—Patient was anæmic, of average height, and weighed nearly nine stones. Pulse 84, regular, and of fair volume. Tongue clean, bowels regular, catamenia regular but excessive. The cardiac dulness was increased a little to the left, and the apex-beat was in the fifth space, half an inch to the right of the nipple line. A soft systolic murmur was heard at the apex, which could be followed to the left anterior axillary line; it was increased by much exertion. Liver was felt just below the costal margin.

Diagnosis.—Mitral insufficiency, with fairly good compensation. The lesion at the mitral valve was probably choreic in origin. The patient's otherwise satisfactory condition was being disturbed by her anæmia, consequent upon the excessive menstrual loss.

Prognosis.—Good; all the while efficient compensation was maintained, and the heart was not damaged further by additional attacks of chorea or by rheumatism.

Treatment.—Full directions as to the character and amount of exercise to be taken. She was to lie up during her periods. A mixture containing small doses of bromide of ammonium, Fowler's solution, and ammonio-citrate of iron, was to be taken thrice daily after meals.

December 13th.—Patient stated she felt remarkably well; the period was much more satisfactory. There had been only one attack of palpitation, and that was after having taken tea. The murmur was less audible, and the liver was normal. The patient was submitted to a series of resisted exercises without her experiencing any distress. I was now informed that shortly before consulting me in October, the patient had had a most alarming opinion given her of her case, and had been advised that she should at once go through an expensive course of Nauheim treatment.

Remarks.—The chief points in this case are—
(1) Was the patient in such a state as to justify a gloomy prognosis? (2) Was it necessary to submit

the patient to a course of treatment which would involve her transference from her home in the open country to a nursing home in London during November?

(1) It is true there was actual valvular disease, but it was not severe in character. Thus there were no signs of secondary changes in the heart or other organs; the heart was neither enlarged nor dilated beyond that consistent with compensation; the pulse was of fair volume and perfectly regular, and the usual subjective signs of heart disease were conspicuous by their absence.

(2) If, as I contend was the case, the indications were the maintenance of the general health by hygienic measures, tonics, and the lessening of the drain upon the system from the excessive menstrual flow, a more satisfactory result might have been *expected* from the plan that was adopted than from that previously advised.

There remains one more point to be noted—the depressing effect of a bad prognosis on both the patient and relatives. A prognosis can be of no value unless it is founded upon a complete diagnosis and a thorough appreciation of all the circumstances of the case. Undue dependence upon the stethoscope and the sphygmograph is a fruitful source of error in diagnosis.

In this instance the patient's mother had a serious attack of nervous depression in consequence of the needlessly alarming prognosis given on her daughter's case. The cases most likely to

derive benefit from the bath treatment are those where there is no valve lesion, but the heart is enlarged as a consequence of an increase in vascular tension caused by arterial degeneration and rigidity—a condition rarely existing in young patients. It follows that the bath treatment is seldom appropriate in the latter class of patients. Some cases of early dilatation in young patients are, however, very suitable for the saline baths.

The author is desirous of protesting against the universal applicability of any one mode of treatment to the various forms of heart disease, rather than to condemn any particular method. The working capability of a damaged heart may be recovered by appropriate measures, but to suggest that an undoubtedly diseased valve can be restored to its normal state by one or more courses of saline baths is but to bring disappointment to the patient and discredit on medicine.

Heart Failure during Convalescence from Diphtheria.—*Case 32.* A. J—, aged eight years, whose health had always been very good, was attacked with diphtheria on November 16th, 1899.

The patient was under the care of Dr. G. D. Wilson, of Wandsworth Road, to whom I am indebted for the notes of the case. There was a large patch of membrane on the fauces and some albumen in the urine. On the following day an injection of half an ounce of antitoxin was administered. In twenty-four hours the patch had nearly gone, but there was fresh deposit on the

tonsils ; accordingly a second injection was given. By November 21st the membrane had entirely disappeared, the temperature was normal, and the urine only contained a trace of albumen. At the expiration of two weeks from the onset of the illness, the patient was allowed to leave the bed and rest on a couch in another room. All went on well with the exception of some loss of power in the right arm. On December 9th the child was seized with severe convulsions, and the urine was then found to contain one third albumen. Twelve hours later vomiting came on, which was followed by syncope, from which the child recovered with difficulty. Two days afterwards (December 11th) I saw the case in consultation with Dr. Wilson. The child was in a listless state, and could with difficulty be roused at all. The lips were cyanosed, the heart's action was of a feeble galloping character, and only some of the contractions were felt at the wrist ; the pulse could not be counted, and the respirations were forty-eight to the minute. The cardiac dulness was a little increased ; there was no murmur. The patient was too ill to allow of the lungs being examined posteriorly, but from the sounds heard in the lower axillary regions, they were most probably congested. The diaphragm was acting feebly ; the liver was considerably enlarged. The heart muscle was doubtless enfeebled, and the prognosis was bad.

Treatment.—The child was to be kept in the recumbent posture, champagne was to be taken in

small and frequent doses, the bowels were to be relieved by doses of one tenth of a grain of calomel every half hour until they were freely moved, and a mixture containing digitalis, nux vomica, and ether was ordered to be taken every four hours. The child steadily improved, the heart's action became stronger, the lungs nearly cleared up, the liver receded, and the urine had only a trace of albumen. On December 24th, without any warning beyond the ominous one of vomiting, the patient suddenly died from syncope. The urine had been again found to have albumen to one-fourth on the morning of the attack. No post-mortem could be obtained.

Remarks.—When the salicylates were found to be so valuable in the treatment of acute rheumatism, the all-important question was whether the liability to cardiac implication would be diminished by the treatment? Of the treatment of diphtheria by antitoxin the question was, whether the incidence of the various paralyses and other affections would be lessened by the serum treatment? Here, as is so often the case, figures are fallacious. The recovery of a much larger proportion of cases under the antitoxin treatment would obviously furnish more candidates for the sequelæ of the disease.

As regards the cardiac complications, it must be remembered that the circulatory system is very generally affected in diphtheria. Epigastric pain

and a pulse showing considerable variations are bad omens. Patients presenting these signs should be kept in the recumbent position, and all unavoidable movements should be gently made.

Heart failure is prone to occur during the first week or two of the disease, but it may come on later. The degenerative changes in the heart muscle (see page 7) may proceed so surreptitiously as not to excite suspicion. In the case before us the enlargement of the liver would suggest that the heart had not been acting efficiently for some days before the first syncopal attack—indeed, while convalescence was apparently proceeding satisfactorily. Our prognosis in diphtheria should always be guarded, especially during the early weeks of the disease.

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TWO APPENDICES.

I.—Rest in the Treatment of Heart Disease.

II.—The Judicious Use of Tonics.

APPENDIX No. I.

REST IN THE TREATMENT OF HEART DISEASE.

It was noted by one of the reviewers of my book on 'Heart Disease in Childhood and Youth' that I had not given sufficient prominence to the value of rest as a therapeutic measure. I had perhaps taken it too much for granted that its importance was already fully recognised. But, considering the insistence with which opposite mode or modes of treatment have been advocated of late years, it is perhaps well to again put forward the unique claims of rest.

The mistake has been made in fostering in the lay mind the idea that all methods of treatment have been superseded by baths and exercises, and that a certain German health resort is a veritable Mecca for cardiac patients of all kinds, and at all stages of the disease; whereas a large proportion of such would reap more lasting benefit by treat-

ment based on the recognition of the particular requirements and varying condition of each case. The truth is, no one plan of treatment is of universal application; and I trust I shall be able to show that, without disparaging other therapeutic measures, rest has its own special place in the successful treatment of many forms of heart disease.

The importance of rest in the treatment of both acute and chronic cardiac affections has long been known; it may, however, be profitable to consider in detail the indications for rest and the rationale of its application.

1. Pain is a common symptom in all forms of heart disease, and it varies in intensity and importance in different cases. Now assuming that the numerous extra-cardiac causes for pain in the heart or its neighbourhood have been eliminated, such as pleurisy, intercostal rheumatism, and neuralgia, indigestion, etc., the existence of pain, especially when provoked by exertion, is an indication that rest is necessary for successful treatment. It is noteworthy that external applications of a sedative nature are not of much value for true cardiac pain. Belladonna is frequently used for this purpose, but not with very satisfactory results. Mr. Hilton in his classical lectures on "Rest and Pain," after showing the relief that can be obtained in some chest affections "through the medium of anæsthetics applied to the cutaneous nerves associated with the cardiac nerves of the pleura costalis," continues thus: "But I admit we

have very little opportunity of acting directly upon the heart or pericardium through the external or cutaneous nerves associated with the cardiac nerves, so as to induce physiological rest in that organ by the external application of anæsthetics. You will be impressed with this conclusion when I remind you that there are but a few filaments of the upper intercostal spinal nerves which join the cardiac plexus of the sympathetic nerve within the chest ; and that these same intercostal nerves distribute only a small number of filaments to the skin of the chest and back. It must not, however, be overlooked that the cervico-spinal nerves communicate with the cardiac nerves derived from the sympathetic ganglia in the neck. These are apparently the only nerve-trunks extending from the surface of the body to the heart which would permit of direct anæsthetic influence being propagated from the skin to the heart."

As pain is one of the danger signals in heart disease which points to the necessity for rest, not only for its relief, but for the functional ability of the heart itself, it is well so kind but cruel a monitor should not be too easily silenced.

Probably the chief cause of pain in chronic cardiac disease is distension of one or more of the chambers of the heart. A. S—, æt. 14, came under my care in June, 1901. He had rheumatic fever severely at 7 and 13½ years, but he had kept in good health up to December last. He complained of palpitation, dyspnœa, especially on exert-

ing himself, and an occasional sharp pain at the heart. There was considerable bulging at the præcordial region, heart's action was forcible, and the apex-beat was at the sixth space. There were double aortic and mitral systolic murmurs. The patient's own words were :—" When the palpitation stops, severe pain at the heart comes on, which is relieved when the heart beats well again." This symptom commonly occurs in valvular disease, when the heart is called to do work beyond its power by exertion on the part of the patient. The compensation may be good enough to enable the heart to carry on the circulation while the body is at rest, but the balance may be so delicate that a little strain will embarrass its action and lead to an increase of intra-cardiac tension which the weakened muscle is unable to cope with, and pain is one of the results. As the case advances on the downward grade pain may follow the least voluntary movement, and the oft-repeated demand for rest has to be obeyed. Now as the chief aim of the physician is to prevent this breakdown, he orders more or less complete rest when pain and other signs of commencing cardiac failure present themselves, and he seeks by treatment to restore the functional capability of the heart. One of the most valuable of these means is rest.

Another indication for rest is the occurrence of dyspnœa, which, like pain, is a sign of want of due compensation. Dyspnœa is an indication that the right heart is involved ; hence its frequency in the

later stages of most heart cases. If the failure be primarily of the left ventricle, its cavity, not being properly emptied, is unable to receive the full complement of blood ; the blood-pressure in the pulmonic circuit is raised, and a strain thrown upon the right side of the heart. In these cases active measures, such as the application of leeches, or even venesection, will often give greater relief than stimulants by relieving the strain on the right side of the heart, and so enabling the chambers to contract upon their contents.

Inflammation of a serous membrane is nearly always accompanied by pain, and nature endeavours to mitigate its severity by limiting the movement of the inflamed part or parts. In pleurisy the patient involuntarily fixes the chest on the affected side ; in peritonitis the abdominal muscles become rigid ; and in arthritis the muscles around the joint, by rigid contraction, ensure comparative rest. The heart, however, must work under all circumstances.

In acute affections of the heart, pain, though generally severe, may be not a very marked symptom, yet rest is essential. The aching, cutting, or boring pain common to acute pericarditis is so urgent that it calls loudly for relief, and opium, in such cases, not only makes the pain endurable, but calms the excitement of the organ and thus gives it comparative rest.

In heart failure rest is an indispensable element in successful treatment, and this is especially true

in the early stage of the affection. If the dilatation is to be remedied it must be by sparing the heart all avoidable work, and by improving the condition of the myocardium. It is distressing to see children who have had to continue drill when, if the effect of such exertion had been noticed and rightly interpreted, much damage to the heart might have been avoided. Errand boys often present themselves for treatment when they can scarcely move without dyspnœa quickly supervening. Examination in such cases generally reveals extreme dilatation of the heart as well as valvular lesions, the dulness extending an inch or more beyond the right costo-sternal margin, and on the left to the anterior or mid-axillary line.

Rest as a therapeutic agent must be considered in two aspects: (1) functional to the heart itself; (2) bodily and mental rest. Under the first category would come the use of opium, already referred to; and bleeding, by giving relief to distension at the right side of the heart, especially when there is engorgement of the lungs evidenced by cyanosis. Dr. Lees has emphasized the importance of recognising dilatation of the right auricle. His remarks on this subject in his presidential address to the Harveian Society may well be quoted: "Very few percussors pay the least attention to this structure [right auricle], and many seem to be unaware of the fact that dulness due to it may always be detected, even in the normal heart, in the fourth right intercostal space. The

third space ought to be resonant quite up to the sternum, and in the fifth space the hepatic dulness alters the note, but in the fourth space the dulness of the right auricle is present for about one finger's breadth in the adult and rather less in the child. When the auricle is dilated it may extend to two fingers' breadth in the fourth space, and from one and a half to two fingers' breadth in the third, and may even be detected in the second. The accurate determination of the size of the right auricle is a matter of the greatest importance, and often indicates at once the necessity for leeches to relieve distension." No one who has witnessed the improvement in cases of right auricular distension by the abstraction of blood can doubt the value of the procedure. The baneful effects of alcoholic stimulation in such cases I have written on elsewhere.*

The relief witnessed in cases of hypertrophied heart associated with high arterial tension by a dose of calomel is, in a great measure, due to the "opening up" of the capillary circulation by the removal from the blood of the results of faulty metabolism, thus diminishing the strain upon the left heart. In the cardiac dilatation met with in cases of anæmia, rest, more or less complete, is essential. How many a work-girl and domestic servant would be saved from becoming a perma-

* "The Rôle of Alcohol in the Treatment of Heart Disease," 'The Lancet,' 1895.

ment heart cripple if rest were taken as soon as the heart showed signs of dilatation.

Cases of aortic regurgitation not infrequently recover much of their lost compensation over and over again if rest is resorted to as soon as there are signs of fresh yielding of the left ventricle. When the patient assumes the recumbent or semi-recumbent position the weakened left ventricle is but little taxed in sending the blood on so gentle an incline, and comparative rest is obtained, while at the same time the myocardium is strengthened by strychnine and other means. When the later stages of valvular disease have arrived, and the lungs are gorged or œdematous, the liver enlarged, and possibly ascites present, the patient has to be propped up with pillows, and ultimately is compelled to spend his time in the chair. Under these circumstances it is the greatest cruelty to insist on the patient keeping his bed. With laboured breathing it is obvious that the ribs and diaphragm can act better in the sitting posture. Moreover when there is more or less general œdema the fluid can gravitate to the legs and be drawn therefrom much more satisfactorily when the patient takes to the chair. These patients are often unable to sleep, and the insomnia has a wearing effect upon the nervous system which aggravates the struggles of the labouring and faltering heart. The beneficial effect of a dose of morphine combined with strychnine is most marked at this juncture by giving the required rest. The altered expression

in the faces of such patients after a few hours' sleep is evidence of the value of the sedative.

After a cardiac patient has had rest and benefited by it, the question arises whether the heart has sufficiently recovered to stand the strain of passive exercises. By noting carefully the position and strength of the apex-beat and limits of cardiac dulness, then watching the effect of a few resisted exercises, an approximate estimate may be formed of the capabilities of the cardiac muscle. If the action of the heart becomes stronger and the pulse becomes slower and generally improved under stimulation, the exercises can be persevered with, while if the action tends to increased embarrassment of the circulation further rest must be enjoined, and the nutrition of the general muscular system kept up by judicious massage for a further period. Cycling on the level, with more or less frequent intervals of rest, is one of the best forms of exercise in suitable cases.

When the patient's circulatory system improves with muscular exertion, adequate intervals of rest must be enjoined even when compensation has been restored. In other words, the physician must in each case "feel his way." In aortic cases pallor and faintness are the signs that the heart is bearing the strain badly; while in mitral disease dyspnoea and cyanosis are the danger signals.

Young patients with aortic reflux whose compensation has given way under extreme muscular stress, but who retain a fairly good second sound

at the base, recover wonderfully if rest is early resorted to and sufficiently long maintained. It is more surprising still how the youthful heart will recover its working capability over and over again under rest and treatment. Mitral cases do not as a rule respond so readily and completely to the same measures. When, however, we are dealing with heart failure in patients who have arrived at the degenerative period of life, or those who have anticipated this stage by alcoholic excess, the beneficial effects of rest are not so well marked ; it is, however, more rather than less needful on this account. To send such a patient on a long journey for the purpose of treatment without being assured that he is in a fit state for travelling, and that it is probable he will derive benefit from the visit, is to run a risk that should not have medical sanction. Cases of very chronic Bright's disease where a cloud of albumen has been noticed for years, yet the patient has gone about his work without let or hindrance, at times suddenly manifest severe cardiac symptoms. Such a case is at present under my care, the patient being a professional man forty-five years of age. He had had a trace of albumen in his urine for ten years without any inconvenience arising from it. Suddenly last December, after taking a cup of black coffee, he was attacked with severe angina, which, from the character and area of the pain, was supposed to indicate aneurysm of the aorta. The heart was found to be hypertrophied, but devoid of valvular lesion ; thorough

investigation gave no evidence of aneurysm, leaving the subjective signs alone to suggest that condition. Moreover the urine was of the same character as it had been for years. The patient would not consent to forego his engagements; and he elected to try the effect of medicinal and dietetic treatment. He got on fairly well during the day, but the nights were distressing, so that he was compelled to rest. The symptoms were speedily removed by rest and medicinal treatment, and the patient in a short time returned to his normal state of health.

Another form of rest so valuable when it can be obtained is that of the mind. The necessity of mental rest should always be borne in mind in treating severe cardiac cases. In the instance just related the comparative importance of physical and mental rest had to be considered. Here was a man of an anxious and excitable temperament who had important engagements on hand, to whom rest would be impossible unless his mind was easy. I therefore concluded he had better get his business done with as little exertion as possible, and then lie up.

An abrupt manner in communicating to the patient the serious nature of his disease has, I am sure, a prejudicial effect upon most minds which, by inducing despondency, renders the sufferer indisposed to make the best use of means for his recovery. When the case is a grave one the patient should be urged to follow directions strictly, and warned that his recovery, so far as it is possible,

depends upon his doing so. The relatives are the ones to whom the worst fears are to be confided. Here, as elsewhere, each case will have its particular bearings, and must be dealt with accordingly.

Prognosis in cardiac cases may appear simple enough, but it is not so in all. To alarm a patient on insufficient grounds is to make an impression on his mind that will not easily be removed—a condition inimical to mental repose. Patients who protest they would rather know the worst are, in my experience, those who bear bad news anything but well.

To sum up, it may be stated of rest that—(1) its place in the treatment of many forms and phases of heart affections is both invaluable and unique ; (2) it is an indispensable preliminary to the adoption of anything of the character of “cardiac gymnastics ;” (3) the duration of the rest is to be determined by the condition of the patient, especially by the extent of recession the dilatation has undergone, and the position and character of the apex-beat ; (4) the effect of exercises upon the heart should be tested before deciding upon their extent or frequency ; in all cases there must be sufficient intervals of rest between each exercise ; (5) when the condition of a heart has improved under rest, but the strain of even moderate exercise is borne badly, massage of the limbs while the patient is lying down should be resorted to ; in appropriate cases cycling on the level is one of the best forms of exercise in cardiac cases ; (6) saline

effervescing baths are useful in a limited class of cases, but they can never replace rest, though they may be beneficial as adjuncts to other treatment ; (7) mental repose is invaluable, especially in patients of an emotional or neurotic temperament. An abruptly given bad prognosis may be most detrimental, and jeopardise any chance of improvement that may be present.

APPENDIX No. II.

THE JUDICIOUS USE OF TONICS.

It will be readily conceded that the value of a remedy is in proportion to its appropriateness for the individual case in which it has been prescribed. I want now to point out (*a*) some of the instances in which tonics may be misapplied, and (*b*) to show the importance of a correct judgment in the selection of an appropriate tonic when one is needed.

When a patient has so far recovered from a severe illness that a condition of debility only remains, what are the factors that make for a more or less complete restoration to health? They are mainly (1) the *vis medicatrix naturæ*, (2) a more liberal diet, (3) change of air and scene, (4) medicinal and other tonics. When normal health and strength have been obtained it is generally impossible to say to which of these means the greatest credit is due. Medical men would vary in their

opinions. One would state that there is a natural tendency towards health which will in most cases assert itself when disturbing influences have been removed, provided this process is not thwarted by undue interference on our part. Another will affirm that improved diet has been the most potent element in imparting renewed vigour to the patient. A third will give the first place to the increased oxidation consequent upon a stay at the seaside. While a fourth, if he is biassed in favour of drugs, will claim for his tonic medicines the largest share in the beneficial result. The truth is, all four means have done good.

It has been my conviction for many years that no group of remedies has been more abused than those classed as tonics. When I was a pupil at the Royal General Dispensary, Bartholomew Close, "*Mistura Quinæ*" was with one of the physicians almost his only prescription. On his days it was customary to prepare several gallons of this nixture. Again, the expenditure for quinine at Guy's Hospital had grown to such an extent in 1873 that the treasurer expressed a wish that the use of this drug should be limited to cases where it was really necessary. Through the courtesy of the clerk of Guy's Hospital I am able to furnish the exact figures. It will be noticed there is a marked diminution in the quinine bill in 1874, the year following the treasurer's note:—1864, £761; 1865, £464; 1866, £567; 1867, £482; 1868, £745; 1869, £336; 1870, £512; 1871, £553;

1872, £704; 1873, £877; 1874, £187; 1875, £203; 1876, £200; 1877, £187. The lowness of the figures for four years following the initial reduction shows that the medical staff saw no reason to return to the use of quinine as an ordinary tonic.

I propose to discuss the use of tonics in general debility and in diseases of the more important organs.

In general debility after a severe illness a tonic is, in most cases, required; but the selection of the most suitable member or members of this class of remedies is of primary importance. Thus a patient recovering from an inflammatory affection of the digestive tract will do better on a vegetable bitter than with an astringent form of iron. The former would tend to improve the digestion, while the latter would be liable to cause irritation to the enfeebled mucous membrane and lead to constipation later on. In children who are recovering from broncho-pneumonia small doses of arsenic will be very beneficial. In all stages of syphilis, nux vomica or strychnine is the most suitable tonic with which to combine the more active and specific medicines. These instances will suffice for illustration.

In cases of want of strength, popularly called "debility," the public for the most part adopt one or more of three courses—take quack medicines, increase the amount of their stimulant, or seek professional advice. The mischief done by dosing with advertised tonics is writ large in the domestic

treatment of delicate children. It falls to the lot of most practitioners to see children who have had some preparation of the hypophosphites alleged to contain every requisite for "the building up" of bone, muscle, and nerve, with the result that the unfortunate victim is in a weaker and more emaciated condition than when the much-vaunted medicine was commenced. Often matters have been made worse by addition of cod-liver oil with the idea of improving the nutrition. These patients have generally a muddy complexion, teeth stained by iron, constipation with offensive stools, a dirty tongue, and foul breath. We are told the child has no appetite, that it is fretful, sleeps badly, and frequently complains of headache. The mother will perhaps say her child has but recently returned from a prolonged stay at the seaside, or some inland health resort, and yet it has become worse rather than better for the visit. Cautious inquiry will, in most cases, discover that the patient has been improperly or excessively fed, to the extent possibly of dining late in the evening. Moreover such a life of excitement leads to wakeful or disturbed nights. Small wonder that a child living so unnatural a life should become feeble and peevish as a result of chronic catarrh of the digestive tract leading to malnutrition and auto-intoxication.

The obvious treatment of such a case is to stop all tonics and cod-liver oil, to prescribe simple and regular meals, allow no food or sweets to be taken

between meals, insist on regular exercise in the open air whenever the weather is at all good, and see that a sufficient amount of sleep is obtained. This all seems apparent enough, yet how many children drag on a miserable existence for want of such treatment !

The medicinal treatment should consist of one or more doses of calomel, followed by rhubarb and soda, until the tongue has been cleaned and a healthy appetite obtained, after which a suitable tonic may be ordered, though, generally speaking, none will be required.

To another class of debility cases belong young men from sixteen to nineteen years of age, whose pallor is put down to over-work of some kind. Many of these patients have been victimised by quacks, and have gone through the gamut of advertised tonics with no beneficial result. We may discover we have to deal with early phthisis, diabetes, albuminuria, or some other serious disease, in which case valuable time has been lost. But the cases I am thinking of are those of lads who are suffering from the mental and physical effects of bad habits learnt at school, the former being caused or aggravated by reading pseudo-medical books and the terrifying remarks of well-meaning but injudicious friends. To give such patients iron or, still worse, strychnine, is to further stimulate their already over-sensitive sexual organs. What is needed is not an ordinary tonic, but treatment of the physical and mental conditions

underlying the debility. One or more of the following points may require attention :—A tight or adherent prepuce, constipation, threadworms in the rectum, errors in diet, especially as to late and heavy meals and the use of alcohol, sedentary habits, etc. On the mental side the medical man should seek the confidence of his patient and be sympathetic in his manner towards him, and he must be assured that he will get ultimately quite well. As for drugs, bromide of ammonium with small doses of arsenic will be found to be of value.

I will now refer to habitual constipation as a cause of debility. Young women come before us complaining of great weakness whose condition may be in a great measure, if not entirely, due to retained fæcal matter with self-poisoning therefrom. If there exists deficiency or suppression of the menstrual function, the temptation in a very busy practice is to prescribe iron forthwith. Now apart from anæmia being possibly due to phthisis, gastric ulcer, renal or uterine disease, piles, etc., the condition may be entirely caused by chronic constipation. There may be a daily evacuation or even occasional attacks of looseness, and yet a large amount of old material still remain undisturbed. To give these patients iron without previously clearing the bowels is only to increase the mischief. And it must be remembered that aperients will have to accompany any ferruginous tonic that may subsequently be required. I have, however,

seen the anæmia disappear and a clear, healthy complexion follow the use of aperients alone.

Another class of cases of skin pallor which refuses to respond to routine tonic treatment is that where the anæmia and general want of strength are consequent upon tight lacing. The effects of compression of the lower part of the chest and the upper part of the abdomen upon the contained organs are: (*a*) interference with the circulation, (*b*) lessening of their functional activity, (*c*) displacement of the liver and right kidney downwards. Among the results that might be expected to follow are pallor tending to become of an earthy character, palpitation, shortness of breath, indigestion and constipation, and disturbance of the menstrual function. It is surely folly to expect any benefit from tonics, or, indeed, any medicinal treatment, unless the pressure referred to be removed or materially mitigated.

M. O—, a well-developed, thick-set, single woman æt. 20 years, came under my observation in the out-patient room. She complained of breathlessness on slight exertion, want of appetite, constipation, and irregular menstruation. There was no history of any previous illness. When the chest was uncovered it was at once apparent that the corset she was in the habit of wearing was very tight. Moreover the facial expression became less anxious when the chest had full liberty of expansion. My question as to tight lacing was, as usual, met with an emphatic negative. A com-

parative measurement of the lower part of the chest and the cuirass showed a difference of nearly four inches. Thorough examination failed to give evidence of visceral disease of any kind, and a provisional diagnosis of "tight lacing" was made. A placebo, with careful directions for taking the inoffensive medicine, was prescribed, and more roomy stays ordered. There was manifest improvement in a week, and after a short time recovery to health was complete without the administration of a single dose of iron.

A. K—, a lady æt. 40 years, consulted me early this year on account of the following symptoms :— Stabbing pains at the heart, giddiness, shortness of breath on exertion, pain at the back of the head, a sense of constriction of the chest, a "tumbling sensation at the heart" coming on frequently and without any known provocation, and flushing of the face after meals; the patient also complained that her hands died off on her going to sleep. There had been no previous illness of any consequence. On examination the thoracic organs were found to be normal; there was some splashing on abdominal palpation. The patient was generally fat, and weighed 13 st. 5 lbs., while her height was 5 ft. 4 in. The difference between the body measurement and the stays was five inches. The case was diagnosed as indigestion with some gastric dilatation, probably due to, or at least aggravated by, tight lacing. Treatment was in accordance with the diagnosis, and it was so far successful that by

three weeks all the symptoms had left, and she expressed herself as feeling better than she had done for a long time. I venture to affirm that no treatment would have given such good results if the pressure of the stays had been allowed to remain.

Phthisis is another disease where tonics are at times given without the exercise of requisite discrimination. Indigestion is a frequent early symptom of this disease, and is liable to occur in all stages of the affection. Mild vegetable tonics with an alkali, such as gentian and soda, is of more benefit than the more potent ones. This was my experience when working at the North London Hospital for Consumption a few years since.

Cardiac tonics are among the most misapplied. The routine prescription of digitalis when and wherever a murmur is discovered is in many cases not only unnecessary but positively harmful.

A. H—, a stout married woman about forty years of age, was seen in consultation. She complained of frequent severe attacks of palpitation followed by faintness, which was at times of an alarming character, especially during the night. There was also giddiness and a sense of “shaking” at the heart. On examination the heart’s apex was at the fifth space half an inch to the right of the nipple line; the cardiac dulness was not increased in any direction; the action was excited, rapid, and regular; and, but for an occasional whiff

systolic in time at the aortic orifice, the sounds were quite normal. The liver and lungs were healthy, and the urine normal. The patient had had cardiac tonics for some months, but she became worse rather than better by their use. The case was diagnosed as neurotic, and a favourable prognosis given. Treatment based on the diagnosis was followed by subsidence of all the heart symptoms and a general improvement in health.

Here was a patient with severe subjective cardiac symptoms of long duration who also had a suspicion of aortic stenosis, and although these symptoms were of long duration no secondary changes in the heart or other viscera were present. Again, cardiac remedies aggravated rather than relieved the symptoms. Instances of the misuse of direct cardiac tonics might be multiplied indefinitely.

Neuralgia, it may be urged, should at any rate be treated by tonics, especially by quinine. I agree that some neuralgias are very successfully treated with quinine. Take, however, neuralgia connected with a carious tooth. I think we have all been at times disappointed at the effect of quinine even in large doses, and the patient has had to go through all the miseries of an alveolar abscess. Pain in a decayed tooth is provoked by exposure to cold, irritating matter applied direct to the exposed nerve, or from poisonous material circulating in the blood due to mal-assimilation of food or constipation. The latter cause is illustrated by the follow-

ing case:—An old friend sought my advice for neuralgic pains in the face which had refused to yield to treatment. On examination a tender and carious tooth was discovered. The tooth was too valuable to be removed, and it was quite one for conservative dentistry. The bowels were habitually costive, and the tonics which had been taken had increased the constipation. A dose of calomel was ordered, to be followed after four hours by a saline aperient which was to be repeated at intervals until fæcal masses were no longer to be seen in the evacuations. The following day my friend was quite well, and the tooth no longer painful even when tapped smartly. The tooth was subsequently stopped.

It is possible that increased vascular tension from the absorption of toxins from the bowel affected the exposed nerve-pulp, but, whatever may be the true explanation, the fact remains that the pain was removed by purging.

Tonsillitis used to be treated by large doses of Liq. Ferri Perchlor. under the belief that the disease was an outcome of debility, and that a tonic was required. Acting upon this theory, port wine and strong beef-tea were ordered. Under this *régime* suppuration generally occurred, with all the attendant suffering. The recognition of rheumatism as the chief etiological factor in this disease has led to the employment of the salicylates, but even here the efficacy of the drug will be more assured if it is preceded by a brisk purge.

No discussion on tonics can be complete without reference to alcohol. That alcohol is at times a valuable therapeutic agent no unprejudiced person will deny ; whether it is a tonic in the usual acceptation of the term may be open to doubt. It is certain that with increasing knowledge of disease and the effects of remedies we have learnt to depend less upon alcohol than formerly. Alcohol is a useful cardiac stimulant, and has the power of increasing functional activity, as seen in some cases of atonic dyspepsia, and so indirectly assisting in the restoration to health. But this is a very different thing to the popular conception of the effect of alcohol even within the limits indicated. It may be necessary, even at the risk of doing harm elsewhere, to stimulate an enfeebled organ to activity, but the temporary good effect thus produced offers no warrant for the use of alcohol as a routine tonic.

The most mischievous of advertised "tonics" are the coca, iron, meat, and malt wines. That these preparations initiate and foster alcoholic excess, especially in women, I have no doubt. I would urge most strongly that the use of these medicated wines should be discouraged by the profession.

Akin to drugged wines are drugged foods. These preparations are extensively advertised, and have quite a literature of their own. We have predigested foods with malt and drugs of all sorts. These compounds have one characteristic in

common in being more or less nasty ; some of the meat "peptones" have a distinctly fæcal odour. Now I am far from saying that some of the pre-digested foods have not their legitimate use ; but I am persuaded that we need more of the kitchen and less of the laboratory in the diet of the sick and convalescent. It seems to be taken for granted by some that the powers of digestion are entirely in abeyance during illness and convalescence, and that the digestive organs are to be encouraged in their apathy.

The following case illustrates the futility of trusting entirely to pre-digested foods. L. C—, æt. 58, was seen in consultation. She had been ill for some time from influenza, or something very much like that disease. The patient was neurotic, and had been for several days unable to retain nourishment. Malt wine, somatose, and several other preparations had been taken, but still the patient was alarmingly feeble. On inquiry I found the bowels had not been open for several days, and that although nutrient enemata had been given the rectum had not been washed out. The tongue was foul, breath offensive, and there was an icteric tinge in the conjunctivæ. There was nausea with a constant feeling of sickness. It was evident the patient would soon sink from sheer inanition unless more nutriment could be absorbed. The treatment adopted was to thoroughly clean the rectum with a turpentine enema, followed by small but frequent injections of beef-tea, yolk of egg,

and brandy ; calomel in $\frac{1}{10}$ gr. doses every fifteen minutes until the bowels were fairly relieved ; and small quantities of milk and lime water with drachm doses of brandy were taken by the mouth as frequently as possible. The condition of the patient improved in a few hours, and the quality and quantity of the food was cautiously increased up to an ordinary diet.

Three points of practical value arise from study of this case :—(1) That it is useless to prescribe pre-digested foods because other forms of nourishment are not retained when foul material, even in small quantity, is allowed to remain in the intestine ; (2) that nutrient enemata are of no avail unless the rectum is washed out at regular intervals ; (3) that pre-digested foods should not be depended upon for nutrition until every effort to restore or improve the natural functions of digestion and assimilation have been made without success.

When a patient has been taking but little food it is sometimes thought the bowels may be left unrelieved for an indefinite time, and unsuspected auto-intoxication results. The small doses of calomel acted not only as an aperient, but rendered the bowels less septic, while the turpentine enema had a similar but more immediate effect upon the rectum. By these means the digestive tract was rendered able to deal with the lighter forms of invalids' food and trained up to make use of ordinary diet. The only other drugs used were bismuth, bicarbonate of soda, and nux vomica.

Two points should always be borne in mind in the selection of a tonic—(1) the nature of the illness and the special lesions known or suspected to have been present ; (2) that the tonic will in no way be injurious to the natural functions of the body, the integrity of which must be maintained if convalescence is to proceed to complete restoration of health.

The possibility of idiosyncrasies in the matter of toleration of some tonic drugs should be remembered, and a patient's statement that certain drugs always disagree with him should not be lightly brushed aside. Some people cannot take quinine without severe headache following ; others have urticaria after taking the drug ; iron is not always tolerated, and strychnine, even in small doses, affects some patients with toxic effects.



